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Studies towards the Integration of the Social Sciences

Vol. IV, No. 1 Pages 1–112

Page

E. L. TRIST and K. W. BAMFORTH. Some Social and Psychological Consequences of the Longwall Method of Coal-getting... ... 3

HAROLD H. KELLEY. Communication in Experimentally Created Hierarchies 39

MILTON W. HOROWITZ, JOSEPH LYONS, and HOWARD V. PERLMUTTER. Induction of Forces in Discussion Groups 57

Briefer Studies and Annotations

LILY HERBERT. A Case Study of a Group Selection Procedure ... 77

P. BLACK. Toward a Systematic Field of Race Relations 95

Book Reviews (Shorter Notices)... 103

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1951

SOME SOCIAL AND PSYCHOLOGICAL CONSEQUENCES OF THE LONGWALL METHOD OF COAL-GETTING[1]

An Examination of the Psychological Situation and Defences of a Work Group in relation to the Social Structure and Technological Content of the Work System

E. L. TRIST AND K. W. BAMFORTH[2]

I

INTRODUCTION: A PERSPECTIVE FROM RECENT INNOVATIONS

A number of innovations in work organization at the coal-face have been making a sporadic and rather guarded appearance since the change-over of the industry to nationalization. During the past two years the authors have been following the course of these developments. Though differing from each other, they have had the common effect of increasing productivity, at least to some extent, and sometimes the increase reported has reached a level definitely above the upper limit customarily achieved by good workmen using similar equipment under conventional conditions. They have been accompanied by impressive changes in the social quality of the work-life of

[1] The study reported here is one part of a larger project on which the Tavistock Institute of Human Relations has for some time been engaged, concerned with the conditions likely to increase the effectiveness of the "dissemination of information" about new social techniques developed in industry. This project was initiated by the Human Factors Panel of the Committee on Industrial Productivity set up by the Lord President of the Council under the Scientific Adviser to the Government. It has been administered by the Medical Research Council. No responsibility, however, attaches to either of these bodies for the contents of this paper, a shortened version of which has been discussed by the Medical Research Subcommittee of the National Coal Board.

[2] The field work necessary for this study has been lessened by the fact that Mr. K. W. Bamforth was himself formerly a miner and worked at the coal-face for 18 years.

face teams. Greater cohesiveness has appeared in groups, and greater personal satisfaction has been reported by individuals. Decreases have also been indicated in sickness and absenteeism.

These schemes have been initiated in pits where the quality of technical management and the level of group relationships, both within and with the executive, have been sufficiently high to give the security necessary for undertaking new developments. Many of the workmen concerned in the early stages have contributed substantially to the understanding of the issues. Though it is not uncommon for changes of this character to make their initial appearance in so selective a manner, the *élite* status of the pioneer units necessitates some caution in assessing their suitability for wider application.

For this reason, some of those most concerned regarded the proposed dissemination studies as premature, while the writers found their own first task to be that of making a detailed appraisal of the standard current work system, known as the " longwall " method. Two preliminary hypotheses suggested themselves : that the improvements recorded were to be ascribed to remarkable attributes possessed by the innovations ; alternatively, that a considerable part of their effect was to be accounted for by social shortcomings in the longwall method itself, so that changes, modest in themselves, might easily produce the results obtained.

The content of the innovations suggested the greater likelihood of this second hypothesis ; their common characteristic so far having been to take some step that has increased the group-relatedness of the face-worker in a basic respect, though by a simple means. Some have made use of possibilities of improving group relationships associated with " room-and-pillar " techniques, much advocated recently for work in thicker seams. Others have been concerned with altering the form of the work group at the longwall itself. On the " filling " shift, for example, " group sectionalization " has been tried in place of individual " stints ". In the longwall method the total task of coal-getting is spread over three shifts, and the culminating activity of moving the coal on to the conveyor is known as " filling off ". It is on this shift that most troubles appear to accumulate ; and it is on this shift that the largest number of men is employed. Changes that might lessen its difficulties would be specially welcome. But steps of the type taken can scarcely be considered as in themselves " remarkable ". Both the need to take them and the degree of their success point rather to a lack in the social quality of longwall organization in its present form—and to the importance of group relations in the underground situation.

Most competent authorities appear to be agreed that the " hand-got " methods which preceded the longwall provided the face-worker with a social balance that has since been lost. But the reasons for this have remained obscure. Before nationalization their investigation tended to be side-tracked by the fact that the advent of mechanization coincided with the appearance in the coalfields of economic depression and bitter exacerbation of the struggle between miners and owners. Only medical writers, such as Dickson (1)

and Halliday (2), concerned with the epidemic incidence of psycho-somatic disorders among miners working under mechanized conditions, stressed the independent importance of the psychological and sociological factors to be discussed in this report. A more recent medical survey has been made by Morris (3). None of these writers, however, has traced in detail the connexion between the health and productivity of the miner and the social structure of the work system that controls his relationships.

Since nationalization, displacement on to the economic struggle of troubles stemming from this source has tended to be replaced by their displacement on to problems of management-worker relationships; but difficulties in joint consultation are not likely to be lessened by carrying a surcharge that should be placed to the account of the longwall method. Faced with low productivity despite improved equipment, and with drift from the pits despite both higher wages and better amenities, those in authority have increased their interest in the organizational innovations that have been taking place. A point seems to have been reached where the industry is in a mood to question a method it has taken for granted. To assist evaluation of the new developments, the first information requiring dissemination is an account of the social and psychological consequences of the longwall method itself.

In the account to follow, the longwall method will be regarded as a technological system expressive of the prevailing outlook of mass-production engineering and as a social structure consisting of the occupational roles that have been institutionalized in its use. These interactive technological and sociological patterns will be assumed to exist as forces having psychological effects in the life-space of the face-worker, who must either take a role and perform a task in the system they compose or abandon his attempt to work at the coal-face. His own contribution to the field of determinants arises from the nature and quality of the attitudes and relationships he develops in performing one of these tasks and in taking one of these roles. Together, the forces and their effects constitute the psycho-social whole which is the object of study.

The method followed has been to maintain relatively continuous contact over a period of two years with some twenty key informants who represented between them the various coal-face occupations and all of whom had wide and varied experience of the industry. With this group repeated discussions and long interviews have been held. On the management side, similar discussions and interviews have been held with all grades of personnel up to Area Manager. Group discussions were taken over periods of a fortnight at two Divisional schools for Colliery Managers. Other informants have included three psychiatrists with wide experience of miners' problems gathered in medical practice in colliery districts or in public health inquiries.

The earlier situation on the background of which the longwall method originally developed will first be described. Longwall procedure itself will then be discussed. Later sections will be concerned with special problems arising in the various occupational sub-groups.

II

THE CHARACTER OF THE PRE-MECHANIZED EQUILIBRIUM AND THE NATURE OF ITS DISTURBANCE

1. Hand-got Systems and the Responsible Autonomy of the Pair-Based Work Group

The outstanding feature of the social pattern with which the pre-mechanized equilibrium was associated is its emphasis on small group organization at the coal-face. The groups themselves were interdependent working pairs to whom one or two extra individuals might be attached. It was common practice for two colliers—a hewer and his mate—to make their own contract with the colliery management and to work their own small face with the assistance of a boy " trammer ". This working unit could function equally well in a variety of engineering layouts both of the advance and retreat type, whether step-wise or direct. Sometimes it extended its numbers to seven or eight, when three or four colliers, and their attendant trammers, would work together.[3]

A primary work-organization of this type has the advantage of placing responsibility for the complete coal-getting task squarely on the shoulders of a single, small, face-to-face group which experiences the entire cycle of operations within the compass of its membership. For each participant the task has total significance and dynamic closure. Though the contract may have been in the name of the hewer, it was regarded as a joint undertaking. Leadership and " supervision " were internal to the group, which had a quality of *responsible autonomy*. The capacity of these groups for self-regulation was a function of the wholeness of their work task, this connection being represented in their contractual status. A whole has power as an independent detachment, but a part requires external control.

Within these pair-based units was contained the full range of coal-face skills ; each collier being an all-round workman, usually able to substitute for his mate. Though his equipment was simple, his tasks were multiple. The " underground skill " on which their efficient and safe execution depended was almost entirely person-carried. He had craft pride and artisan independence. These qualities obviated status difficulties and contributed to responsible autonomy.

Choice of workmates posed a crucial question. These choices were made by the men themselves, sociometrically, under full pressure of the reality situation and with long-standing knowledge of each other. Stable relationships tended to result, which frequently endured over many years. In circumstances where a man was injured or killed, it was not uncommon for his mate to care for his family. These work relationships were often reinforced by kinship ties, the contract system and the small group autonomy allowing a close but spontaneous connection to be maintained between family and

[3] Hand-got methods contained a number of variants, but discussion of these is beyond present scope.

occupation, which avoided tying the one to the other. In segregated mining communities the link between kinship and occupation can be oppressive as well as supportive ; against this danger, " exogamous " choice was a safeguard. But against too emotional a relationship, more likely to develop between non-kin associates, kinship barriers were in turn a safeguard.

The wholeness of the work task, the multiplicity of the skills of the individual, and the self-selection of the group were congruent attributes of a pattern of responsible autonomy that characterized the pair-based face teams of hand-got mining.

2. The Adaptability of the Small Group to the Underground Situation

Being able to work their own short faces continuously, these pair, or near pair, groups could stop at whatever point may have been reached by the end of a shift. The flexibility in work pace so allowed had special advantages in the underground situation ; for when bad conditions were encountered, the extraction process in a series of stalls could proceed unevenly in correspondence with the uneven distribution of these bad conditions, which tend to occur now in one and now in another section along a seam. Even under good conditions, groups of this kind were free to set their own targets, so that aspirations levels with respect to production could be adjusted to the age and stamina of the individuals concerned.

In the underground situation external dangers must be faced in darkness. Darkness also awakens internal dangers. The need to share with others anxieties aroused by this double threat may be taken as self-evident. In view of the restricted range of effective communication, these others have to be immediately present. Their number therefore is limited. These conditions point to the strong need in the underground worker for a role in a small primary group.

A second characteristic of the underground situation is the wide dispersal of particular activities, in view of the large area over which operations generally are extended. The small groups of the hand-got systems tended to become isolated from each other even when working in the same series of stalls ; the isolation of the group, as of the individual, being intensified by the darkness. Under these conditions there is no possibility of continuous supervision, in the factory sense, from any individual external to the primary work group.

The small group, capable of responsible autonomy, and able to vary its work pace in correspondence with changing conditions, would appear to be the type of social structure ideally adapted to the underground situation. It is instructive that the traditional work systems, evolved from the experience of successive generations, should have been founded on a group with these attributes.

But to earn a living under hand-got conditions often entailed physical effort of a formidable order, and possession of exceptional skill was required to extract a bare existence from a hard seam with a bad roof. To tram tubs was " horse-work ". Trammers were commonly identified by scabs, called

" buttons ", on the bone joints of their backs, caused by catching the roof while pushing and holding tubs on and off " the gates ". Hand-got conditions still obtain, for by no means all faces are serviced by conveyors and coal-cutters. In some circumstances this equipment is unsuitable. But hardness of work is a separate consideration from the quality of the group.

3. The Counter Balance of the Large Undifferentiated Collectivity

The psychological disadvantages of a work system, the small group organization of which is based on pair relationships, raises issues of a far-reaching kind only recently submitted to study in group dynamics (4). It would appear that the self-enclosed character of the relationship makes it difficult for groups of this kind to combine effectively in differentiated structures of a somewhat larger social magnitude, though this inability does not seem to hold in respect of much larger collectivities of a simpler mass character. But in pre-mechanized mining there was no technological necessity for intermediate structures, equivalent to factory departments, to make their appearance between the small pair-based primary units and the larger collectivities called into action by situations of crisis and common danger. To meet situations requiring the mobilization of the large mass group, mining communities have developed traditions generally recognized as above the norm commonly attained by occupational groups in our society. This supra-normative quality was present also in the traditions of the small pair-based organizations. But between these extremes there was little experience.

Sociologically, this situation is not atypical of industries which, though large-scale, have experienced delay in undergoing mechanization. The pair-based face teams corresponded to the technological simplicity of the hand-got methods, with their short faces, autonomously worked and loosely co-ordinated on a district basis. The mass collectivities reflected the large-scale size of the pit as an overall industrial unit. Absent were structures at the level of the factory department, whose process-linked, fractionated role-systems, dependent on external supervision, were antithetical alike to the pattern of small group autonomy and to the artisan outlook of the collier.

In the pre-mechanized pattern, the pair-based primaries and the large relatively undifferentiated collectivities composed a dynamically interrelated system that permitted an enduring social balance. The intense reciprocities of the former, with their personal and family significance, and the diffuse identifications of the latter, with their community and class connectedness, were mutually supportive. The face teams could bear the responsibility of their autonomy through the security of their dependence on the united collectivity of the pit.

Difficulties arose largely from rivalries and conflicts between the various pairs and small teams. A common form of " graft " was to bribe the deputy in order to secure a good " benk ", i.e. a " length " with a " rack roof ", under which the coal was notoriously soft and easy to work. Trammers were encouraged to resort to sharp practices to obtain adequate supplies of

tubs. As supplies were often short, the amount of coal a working pair could send up depended not a little on the prowess of their trammer. Going early to work, he would turn two or three tubs on their sides in his " gate ", maintaining he had taken only one. Ensuing disputes caused frequent fights both underground and in the community. In the common saying, it was he who could lie, cheat, or bully the most who made the best trammer. All this was accepted as part of the system.

Inter-team conflict provided a channel for aggression that preserved intact the loyalties on which the small group depended. In the large group aggression received structured expression in trade union resistance. If the struggle was harsh, it was at least direct and understandable. It was not the insidious kind that knocked the bottom out of life, leaving those concerned without a sense of a scheme in things—the " anomie " described by Halliday (2) after the transition to the longwall. The system as a whole contained its bad in a way that did not destroy its good. The balance persisted, albeit that work was of the hardest, rewards often meagre, and the social climate rough at times and even violent.

4. Mechanization and the Problem of Intermediate Organization

With the advent of coal-cutters and mechanical conveyors, the degree of technological complexity of the coal-getting task was raised to a different level. Mechanisation made possible the working of a single long face in place of a series of short faces. In thin seams short faces increase costs, since a large number of " gates " (see *Figure 1*) have to be " ripped " up several feet above the height of the seam to create haulage and travelling facilities. In British coal, seams less than 4 ft. in thickness are common, so that there was a tendency to make full use of the possibility of working optimally long rather than optimally short faces. For this reason, and for others also, discussion of which is beyond present scope, the longwall method came into being. Applicable to thick as well as to thin seams, it became the general method of coal-getting in the British industry, enabling the average type of pit, which may contain three or four seams of different thickness, to work its entire coal economically, and to develop its layout and organize its production in terms of a single, self-consistent plan. In America, where thick seams are the rule, mechanization has developed in terms of shorter faces and room-and-pillar techniques.

The associated characteristics of mechanized complexity, and of largeness as regards the scale of the primary production unit, created a situation in which it was impossible for the method to develop as a technological system without bringing into existence a work relationship structure radically different from that associated with hand-got procedures. The artisan type of pair, composed of the skilled man and his mate, assisted by one or more labourers, was out of keeping as a model for the type of work group required. Need arose for a unit more of the size and differentiated complexity of a small factory department. A structure of intermediate social magnitude began therefore to emerge.

The basic pattern round which the work relationships of the longwall production unit were organized became the cycle group of 40–50 men, their shot-firer and shift " deputies ", who were responsible to the pit management for the working as a whole. Only in relation to this total cycle group could various smaller sub-groups secure function and acquire social form.

This centring of the new system on a differentiated structure of intermediate social magnitude disturbed the simple balance that had existed between the very small and very large traditional groups, and impaired the quality of responsible autonomy. The psychological and sociological problems posed by the technological needs of the longwall system were those with respect to which experience in the industry was least, and towards which its traditions were antithetical. The consequences of this conflict between the demands of the new situation and the resources available from past experience will be taken up in the light of the detailed account, which will now be presented, of the longwall system itself.

5. The Lack of Recognition of the Nature of the Difficulties

No new equilibrium came into being. As was mentioned in the introduction, disturbances associated with industrial struggle and economic depression have tended to mask those associated with the coal-getting method. Though perception of these latter has begun to clarify since nationalization, shortcomings such as those in the haulage system, more readily appreciated in engineering terms, continue to attract the wider attention. It is only since the morale changes accompanying recent face-work innovations have begun actually to be experienced in working groups that the nature of longwall troubles is becoming manifest. That they require understanding in social and psychological terms is something that still remains largely unrecognized. Accounts so far appearing have presented recent changes almost exclusively in engineering terms.

Anyone who has listened to the talk of older miners who have experienced in their own work-lives the change-over to the longwall cannot fail to be impressed by the confused mourning for the past that still goes on in them together with a dismay over the present coloured by despair and indignation. To the clinical worker the quality of these talks has at times a ring that is familiar. Those with rehabilitation experience will recognize it as similar to the quality of feeling expressed by rehabilitees when ventilating the aftermath in themselves of an impairment accepted as irreversible.

Expectation was widespread that something magical would happen as a result of nationalization. But as one filler put it : " My coals don't wear any new look since Investment Day. They give me a look as black as before." When some of these same men take on a new lease of life, perhaps exaggeratedly, after experiencing one of the new group methods and refuse to return to a conventional working having found a new spirit in themselves and their work-mates, strong clues are already to hand regarding the character of longwall deficiencies. But what has been intuitively grasped has still to become

articulate. So close is the relationship between the various aspects that the social and the psychological can be understood only in terms of the detailed engineering facts and of the way the technological system as a whole behaves in the environment of the underground situation. These points will be taken up in the next two Sections.

III

FEATURES AND DIFFICULTIES OF THE LONGWALL PRODUCTION UNIT AS A WHOLE [4]

1. The scale and Spatio-Temporal Structure of the Three-Shift Cycle

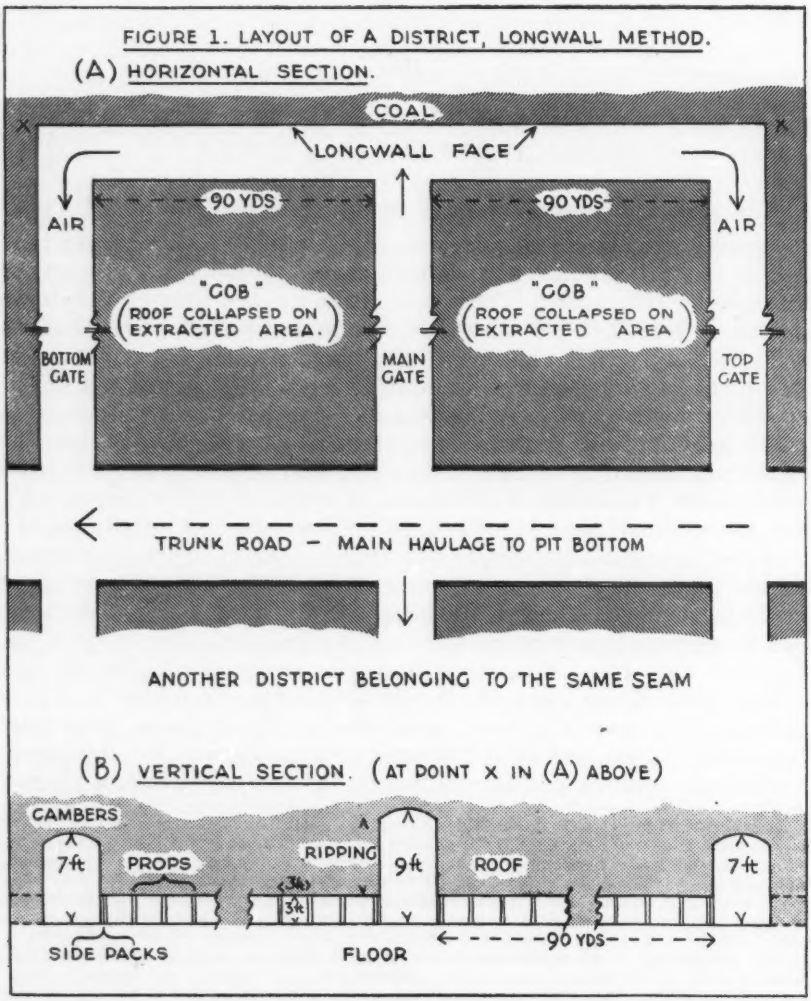
In the longwall method, a direct advance is made into the coal on a continuous front; faces of 180–200 yds. being typical, though longer faces are not uncommon. The work is broken down into a standard series of component operations that follow each other in rigid succession over three shifts of seven and a half hours each, so that a total coal-getting cycle may be completed once in each twenty-four hours of the working week. The shift spread of the 40 workmen needed on an average face is: 10 each to the first ("cutting") and second ("ripping") shifts; 20 to the third ("filling") shift. The amount of coal scheduled for extraction varies under different conditions but is commonly in the neighbourhood of 200 tons per cycle. A medium-size pit with three seams would have 12–15 longwall faces in operation simultaneously.

These faces are laid out in districts as shown in *Figure 1*. Since the longwall method is specially applicable to thin seams, *Figure 1* has been set up in terms of a 3-ft. working. The face, extending 90 yds. on either side of the main gate is within average limits for a seam of this thickness. The height of the face area—that of the 3-ft. seam itself—may be contrasted with the 9 ft. and 7 ft. to which the main and side gates have been ripped and built up as permanent structures with cambers and side-packs. By regulation, props must be placed every 3 ft., and the line of props shown in *Figure 1* (*b*) is that placed immediately against a coal-face waiting to be filled off. The area marked

[4] The procedure followed both in the text and in *Figures 1* and *2* and *Table I* has been to build up a model of the system in terms of the experience of a group of faces similarly run and well known at first hand. What follows is therefore an account of one version of the system, though the version is a common one. Faces exist that are twice as long as that given. In thick seams these may require 40–50 fillers alone (even more), apart altogether from other personnel. In thin seams with high gates more than twice the number of rippers given may be employed, 8 or more on the main gate and some 6–4 on the side gates respectively. On shorter faces there may be only one borer and at least one gummer. Under some conditions packing and drawing-off are separated from belt-work, and loading-point personnel are included as face workers. There are differences in nomenclature in different areas, e.g. "dinters" for "rippers". Variations arise partly from differences in natural conditions (thickness of seam, hardness of coal, type of roof and floor, etc.), partly from preferences in the matter of lay-out, and partly from the amount and character of the equipment available or judged necessary. Though conveyor serviced, quite a long face may be hand-got if the coal is soft; alternatively, two cutting units may be employed if it is hard and the face exceptionally long. Belts are of several varieties ("floor", "plate", "top", etc.). Where the seam is thick enough to eliminate ripping an approximation may be made to a two-shift system. Productivity varies widely in accordance with these differences, as does smoothness of functioning and the degree of stress experienced. Nevertheless, all are versions of one method. The basic pattern is the same.

"Gob" (to use a term common in mining vernacular) indicates the expanse from which the coal has already been extracted. On this area the roof is left to collapse. Only the tunnels made by the main and side gates, which are used for ventilation and for haulage and travelling, are kept open. These

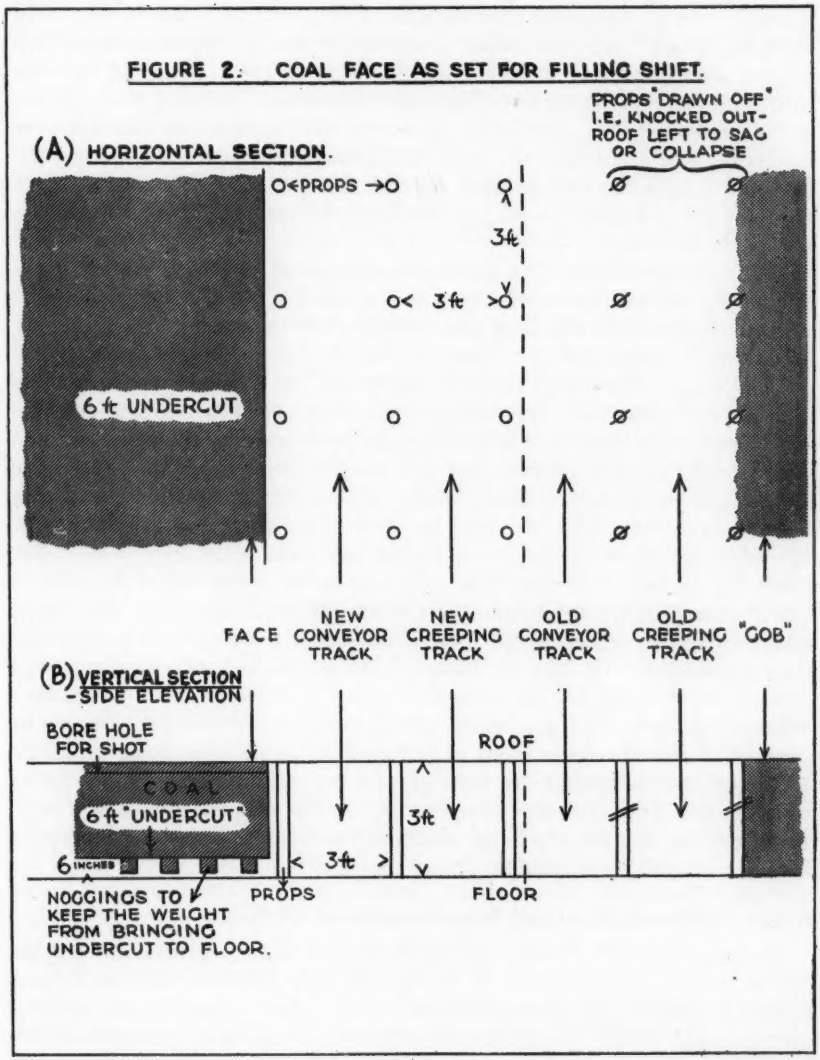
FIGURE 1. LAYOUT OF A DISTRICT, LONGWALL METHOD.



tunnels may sometimes extend for distances of 2 miles, and even more, before the coal face itself is reached from the trunk road leading from the pit bottom.

In each coal-getting cycle the advance made into the coal is equal to the depth of the undercut. A cut of 6 ft. represents typical practice in a thin seam

with a good roof. All equipment has to be moved forward as each cycle contributes to the advance. The detail in the face area is represented in *Figure 2*, where the coal is shown cut and waiting for the shot-firer, whose



task is the last to be performed before the fillers come on. The combined width of the lanes marked "New Creeping Track" and "New Conveyor Track" equal the depth of 6 ft., from which the coal has been removed by the

fillers on the last shift of the previous cycle. As part of the preparation work of the current cycle (before the fillers can come on again), the conveyor has to be moved from its previous position in the " old Conveyor Track " to its present position, shown in *Figure 2*, in the " New Conveyor Track ", against the face. At the same time the two lines of props on either side of the " Old Creeping Track " are withdrawn (allowing the roof to sag or collapse) and thrown over beside the conveyor for the fillers to use in propping up their roof as they get into the next 6 ft. of coal. The term " creeping track " refers to the single, propped, 3-ft. lane, adjacent to that occupied by the conveyor but on the side away from the coal. It allows free passage up and down the face, and is called a creeping track since in thin seams the low roof makes it necessary for all locomotion to take the form of " creeping ", i.e. crawling on the hands and knees.

The mass-production character of the longwall operation necessitates a large-scale, mobile layout of the type described. But the spatio-temporal structure imposed by the long face and the shift sequence makes a difficult habitat when considered as a theatre in which effective communication and good working relationships must be maintained between 40 men, their shot-firer and shift deputies. On the one hand, the group is spread over 200 yds. in a tunnel 2 yds. wide and 1 yd. high, cross-cut only by the main and side gates ; on the other, it is spread over 24 hours and divided up in three successive shifts. The production engineer might write a simple equation : 200 tons equals 40 men over 200 yds. over 24 hours. But there are no solutions of equivalent simplicity to the psychological and social difficulties raised. For psychological and social difficulties of a new order appear when the scale of a task transcends the limits of simple spatio-temporal structure. By this is meant conditions under which those concerned can complete a job in one place at one time, i.e., the situation of the face-to-face, or singular group.

Once a job is too big for a singular group, a multiple group comes into existence, composed of a number of sub-groups of the singular type. In these differentiated organizations of intermediate social magnitude, problems of inter-group relationships are superimposed on, and inter-act with, the intra-group tensions of the primary components. In the longwall production unit, the scale of the task introduces the contradiction of spatio-temporal disintegration as a condition of multiple group integration.

2. The Differentiation and Interdependence of Tasks

Occupational roles express the relationship between a production process and the social organization of the group. In one direction, they are related to tasks, which are related to each other ; in the other, to people, who are also related to each other. At workman level, there are seven of these roles in the longwall system—borer, cutter, gummer, belt-breaker, belt-builder, ripper, and filler—which are linked to the component tasks of the production process. In *Table I* the functions of these seven categories in the interrelated technological and social structures are described in detail in a comprehensive table. For

analytical purposes, however, it is necessary to treat separately these two different aspects of occupational roles ; and, in this section, consideration will be given to the interdependence of component tasks in the production process, and to occupational roles so far as they are related to this. These tasks fall into four groups, concerned with (*a*) the preparation of the coal-face for shot-firing, (*b*) shifting the conveyor, (*c*) ripping and building up the main and side gates, and (*d*) moving the shot coal on to the conveyor.

The face preparation tasks are all performed on the first shift. They include boring holes for the shot-firer, with pneumatic or electrically operated drills, near the roof of the seam through to the depth of the undercut, at short distances (within each filler's " length ") along the entire expanse of face ; driving the coal-cutter so that the blade or " jib " makes an even undercut into the coal some six inches from the floor to whatever depth has been assigned, again along the entire expanse of face ; taking out the six inches of coal (called the " gummings ") left in the undercut, so that the main weight of coal can drop and break freely when the shots are fired ; placing supporting " noggings " underneath it so that this weight does not cause it to sag down to the floor while the " cut " is standing during the next shift. These tasks are performed in the order given. Three of the seven work roles are associated with their execution, two men being fully occupied boring the holes, a further two in managing the coal-cutter, and four in clearing out the undercut.

The success of the shots fired at the end of the second shift to make the coal finally ready for the filler depends on the efficiency with which each of these interdependent preparation tasks has been carried out. Bad execution of any one of them diminishes, and may even cancel out, the effect of the shots, with consequent havoc in the lengths of the particular fillers where such breakdowns have occurred. Holes bored too low leave a quantity of coal, difficult to extract, clinging to the roof after the shots have been fired. If the roof is sticky, this gives rise to " sticky tops ". Holes not bored through to the full depth of the undercut create the condition of " hard backs ", the shots having no effect on this part of the coal. The coal-cutter only too frequently has a tendency to leave the floor and " get up into the coal ", producing an uneven cut. This means less working height for the filler, and also less wages, since his tonnage is reduced. When the " gummings " are left in, the shot is wasted ; the coal has nowhere to drop and the powder blows out of the hole (usually up the " cutting break " in the roof) so that the mass to be extracted is left solid. Failure to insert noggings, which leads to the cut sagging down, also renders useless the services of the shot-firer.

The group of operations concerned with the conveyor involves—since forward movement is blocked by props which must be left standing—breaking up the sections of belt in the old conveyor track and building them up in the new. Each of these tasks requires two men : the belt-breakers and belt-builders. The dismantling part is done on the first shift in the wake of the cutting operation. The reasons include the necessity of shifting belt-engines and tension-ends out of the gate areas (where they are positioned when the

TABLE I

Occupational Structure in the Longwall System

Shift Sequence	*Occupational Roles*	*No. of Men*	*Methods of Payment*	*Group Organization*	*Tasks*	*Skills*	*Status Differences and Ranking*
First (usually called) "cutting" shift). Either *night*, 8 p.m.–3.30 a.m., or *afternoon*, 12 noon–7.30 p.m. (borers start an hour earlier). Though alternating between *night* and *afternoon*, personnel on the cutting shift are never on *days*.	Borer	2	Per hole	Inter-dependent pair on same note.	Boring holes for shot-firer in each stint to depth of undercut.	Management of electric or pneumatic drills, placing of holes, judgment of roof, hardness of coal, etc.	4·5, equal in pair.
	Cutter	2	Per yard	Inter-dependent pair on same note, front man and back man.	Operating coal-cutter to achieve even cut at assigned depth the entire length of the face; knocking out (front man), re-setting (back man) props as cutter passes. Back man inserts noggings.	Requires rather more "engineering" skill than other coal-face tasks. Mining skills in keeping cut even under changing conditions, watching roof control.	1, front man senior and responsible for cut; back man assists; cutting is the key preparation task.
	Gummer	4	Day wage	Loose group attached to cutters, though front man without supervisory authority.	Cleaning out undercut, so that clear space for coal to drop and level floor for filler. The coal between undercut and floor is called "the gummings".	Unskilled, heavy manual task, which unless conscientiously done creates difficulties for filler, for when gummings left in, the shot simply blows out and coal is left solid.	7, equal in group; some chance of promotion to cutter eventually.
	Belt-breaker	2	Per yard	Inter-dependent pair on same note.	Shifting belt-engine and tension-end into face clear of rippers; breaking up conveyor in old track, placing plates, etc., ready in new track, drawing off props in old creeping track; some packing as required.	Belt-breaking is a relatively simple engineering task; engine shifting is awkward and heavy; drawing off and packing involve responsibility for roof control and require solid underground experience.	4·5, equal in pair.
					Reassembling conveyor in new	As with breaking, the level of	4·5, equal in pair.

Second (usually called the "ripping" shift). Either *night* or *afternoon* alternating with cutting shift. Rippers may start rather later than builders. None of these personnel go on *day* shift proper.	Belt-builder	2	Per yard	Inter-dependent pair on same note.	Reassembling conveyor in new track; positioning belt-engine and tension-end in line with this; testing running of reassembled conveyor; placing chocks; packing as required.	As with breaking, the level of engineering skill is relatively simple; inconvenience caused to fillers if belt out of position. The roof control responsibilities demand solid underground experience.	4·5, equal in pair.
	Ripper	8	Cubic measure	Cohesive functionally inter-related group on same note.	To "rip" "dirt" out of main and side gates to assigned heights; place cambers and build up roof into a solid, safe and durable structure; pack-up the sides. The ripping team carries out all operations necessary to their task, doing their own boring. The task is a complete job in itself, seen through by the group within the compass of one shift.	This work requires the highest degree of building skill among coal face tasks. Some very heavy labour is entailed. Since the work is relatively permanent there is much pride of craft. On the ripper depends the safety of all gates and main ways.	2, the status of the "main ripper" is next to that of the front man on the cutter, but he is not separately paid. The group usually contains all degrees of experience and is egalitarian.
Third (usually called "filling" shift). Either *day*, 6 a.m.–1.30 p.m., or *afternoon*, 2 p.m.–9.30 p.m. Never *night*.	Filler	20	Weight—tonnage on conveyors.	Aggregate of individuals with equal "stints"; all on same note; fractionated relationships and much isolation.	The length of the "stint" is determined by the depth of the cut and the thickness of the seam. Using hand or air pick and shovel, the filler "throws" the "shot" coal on to the conveyor until he has cleared his length, i.e. "filled off". He props up every 2 ft. 6 in. as he works in.	The filler remains in one work place while conditions change. Considerable underground experience is required to cope with bad conditions. Each man is responsible for his own section of roof. Bad work on other shifts makes the task harder. It is heavy in any case and varies in different parts of the wall.	4·5, equal throughout the group; "corner" men are envied, reputation of being good or bad workman is important.
3 shifts	7 roles	40 men	5 methods	4 types	The common background of "underground" skill is more important than the task differences.		Differences in status and weekly earnings are small, apart from the case of the gummers.

conveyor is working) in order to allow the ripping operation to proceed. The reassembly of the conveyor is the only task performed in the face area during the second shift. Unless the conveyor is properly jointed, set close to the new face, and accurately sighted in a straight line, a further crop of difficulties arise, and frequent stoppages may interfere with filling. The most modern types of belt, e.g., floor belts, avoid the labour of breaking up and reassembling plates. Belt-engines and tension-ends are cumbersome equipment, but they must nevertheless be shifted every day. Similarly, the last two lines of props have to be taken down and thrown forward.

The third group of tasks comprises those that entail ripping up the roof of the main and side gates to the depth of the undercut, and building them up with a stable roof and firmly packed sides so that haulage- and air-ways can advance with the face. Unless this work is expertly done, the danger of roof falls is acute, with the likelihood both of men and equipment being blocked in the face. This work is carried out by a team of 7–8 rippers.

Only when all these operations have been completed, can the shots be fired and the fillers come on. For the filling operation, the entire face is divided up into equal lengths—except that the corner positions are somewhat shorter in view of difficulties created by the proximity of belt-engines and tension-ends. In a 3-ft. seam, lengths would be 8–10 yds., and some 20 fillers would be required, 10 in each half-face of 90–100 yds. Each filler is required to extract the entire coal from his length, going back to the depth of the 6 ft. undercut. When he has thrown his last load on to the conveyor he has " filled off ", i.e., finished his " length " or " stint ". As he progresses into his coal, he has the additional task of propping up his roof every 3 ft. As well as a hand-pick and shovel, his tool kit includes an air pick, used for dealing with some of the difficulties created by bad preparation, or in any case when his coal is hard.

At a later point there will be a discussion of the differential distribution of bad conditions among the lengths of a face. Here it may be noted that the face is not " filled off " until each and every length has been cleared, and that until this has been done, the new cycle cannot begin. Disorganization on the filling shift disorganizes the subsequent shifts, and its own disorganization is often produced by the bad preparation left by these teams. Every time the cycle is stopped, some 200 tons of coal are lost.

So close is the task interdependence that the system becomes vulnerable from its need for one hundred per cent performance at each step. The most sensitive interaction is between the face-preparation activities and filling, but it is in relation to this that social organization is weakest. This point will be taken up in later sections.

3. The Segmented Quality of the Social Organization

With respect to the way in which the work roles have been institutionalized as regards the persons and groups concerned, a basic segregation of the various categories of workers from each other follows from the fact that it has been the traditional practice for a face-worker to be trained in only one of the seven

roles, and to spend all or most of his underground life in this one occupation. This basic segregation of roles is intensified by the five different methods of payment described in *Table I*, and by the exaggeration of status differences, despite the common background of " underground skill " and the equivalence of earnings (apart from the rather lower rate received by the gummers).

It is still further reinforced by the segregation of shifts. As will be seen from the shift time-tables, the three shifts never meet. Moreover, the two preparation groups alternate on the so-called " back shifts " while the fillers alternate on " days " and " afternoons ", so that a far-reaching community, as well as work, split is effected between the fillers and the others. The " back shift " men are either going to or coming from work in the evening, so that they are cut off from normal community activities during the week. Even at week-ends they are down the pit either on Saturday afternoon or Sunday evening.

As regards the primary work groups in which those performing the various roles participate, there are four radically different patterns : the series of interdependent pairs—borers, belt-builders, and belt-breakers ; the extended pair organization of the cutters and gummers ; the self-sufficient group of eight rippers ; and the aggregate of twenty fillers spread out over the 200-yd. face. The uneven social quality of these different types of primary group will be discussed in *Sections V–VII*, both with respect to intra- and inter-group relations. This unevenness, taken together with the role and shift segregation, works against the social integration of the cycle group as a whole. Yet, in view of the close interdependence of tasks, the social integration of the total work group is a first essential of the system.

It is submitted that the non-existence of the cycle group as a social whole in face of the interdependence of the component tasks is one of the major contradictions present in the longwall method. The social organization is a simple reflection of the " job breakdown ". Because this latter is reintegrated into a technological whole by the task sequence it does not follow that the differentiated role-groups concerned are also and thereby reintegrated into a social whole. Differentiation gives rise to the need for social as well as technological integration. No attempt seems to have been made in the longwall method to achieve any living social integration of the primary and shift groups into which the cycle aggregate has been differentiated. This, of course, is a common omission in mass-production systems.

IV

THE STRESS OF MASS PRODUCTION IN THE UNDERGROUND SITUATION

1. The Interaction of Bad Conditions and Bad Work

Differentiated, rigidly sequenced work systems, organized on mass-production lines to deal with large quantities of material on a multi-shift cycle, are a basic feature of the factory pattern. Even in the factory situation,

their maintenance at a level which allows full and continuous realization of their technological potentialities creates a difficult problem of industrial management. In the underground situation these difficulties are of a higher order, it being virtually impossible to establish the kind of constant background to the task that is taken for granted in the factory. A very large variety of unfavourable and changing environmental conditions is encountered at the coal-face, many of which are impossible to predict. Others, though predictable, are impossible to alter.

The factory and underground situations are different with respect to the "figure-ground" relationship of the production process to its environmental background. In the factory a comparatively high degree of control can be exercised over the complex and moving "figure" of a production sequence, since it is possible to maintain the "ground" in a comparatively passive and constant state. But at the coal face, there is always present the threat of some untoward activity in the "ground". The internal organization of the task "figure" is therefore much more liable to disorganization. The instability of the "ground" limits the applicability in the underground situation of methods derived from the factory.

Unfavourable natural conditions, as distinct from "bad work"—which is the result of human shortcomings—are referred to as "bad conditions". Some of the most dreaded, such as wet, heat, or dust, are permanent features of the working environment of certain faces. But others, less known outside the industry, may also make the production tasks of the face-worker both difficult and dangerous, even though the seam in which he is working is well ventilated, cool, and dry without being dusty. Rolls or faults may appear in the seam. Control may be lost over the roof for considerable periods. Especially in the middle of a long face, certain types of roof are apt to sag down. Changes may occur in the floor; the condition known as "rising floor" being not uncommon. Since some of these conditions, described in *Table II* and *Figure 4*, reduce working height, their appearance is particularly troublesome in thin seams. If the difference between-working in 5 ft. 6 in. and 5 ft. may be of small account, that between working in 3 ft. and 2 ft. 6 in. may often produce intolerable conditions. Loss of roof-control is serious, whatever the working height. In general, bad conditions mean not only additional danger but additional labour. The need to insert packs to support a loose roof is a common example.

Special tasks of any kind, over and above the specific production operation for which a given category of face-worker receives his basic pay, are known as "bye-work". Though many bye-work tasks have gained the status of specially remunerated activities, the rates are such that the overall wage received at the end of a week during which a good deal of bye-work has been necessary is less than that which would have been received had the whole of the five shifts been available for production work. From the face-worker's point of view, bad conditions mean not only more danger and harder work but less pay; and they may also compel overtime. To stay behind an hour

or sometimes three hours longer under bad conditions may involve a degree of hardship beyond the capacity of many face-workers to endure, especially if they are older, and if overtime demands are repeated in close succession.

"Bad conditions" tend to instigate "bad work". When they occur, the smooth sequence of tasks in the production cycle is more likely to be disturbed by faulty performance. Bad work can, and does, arise when conditions are good, from personal shortcomings and social tensions, in themselves independent of bad conditions; but difficulties arising from human failings are more readily—and conveniently—expressed when the additional difficulty, and excuse, of bad conditions is also present. The result is a tendency for circular causal processes of a disruptive character to be touched off. Unless rapidly checked by special measures, often of an emergency character, these, once started, threaten to culminate in the fillers not filling off, and the cycle being stopped. The system is therefore always to some extent working against the threat of its own breakdown, so that tension and anxiety are created.

2. The Magnification of Local Disturbances

Under these conditions, the closeness of the functional interdependence of tasks tends to rebound on itself. Mistakes and difficulties made or encountered at one stage are carried forward, producing yet other difficulties in the next. The inflexible character of the succession gives no scope for proceeding with later tasks when hold-ups have occurred earlier, and the temporal extension of the cycle increases the likelihood of interference from unpredictable events, which are provided with twenty-four hours in which to occur. The aspects of mass-production engineering methods (rigid sequence, functional interdependence and spatio-temporal extension), which create vulnerability in the underground situation, all stem from the large-scale character of the longwall cycle. For it is the magnitude of the cycle, produced by the long expanse of face scheduled for clearance, that leads to the segregated treatment of the component tasks—in view of the large amount of work required on each—and thence to their fixed, extended succession. In an organization of this scale, local disturbances at specific points—resulting from the interaction of bad conditions and bad work—resonate through a relatively large social space, becoming magnified for this reason.

Stricter field theory formulation may assist the more dynamic description of this situation. The size of the bounded region in which the system exists as a whole, together with the high degree of differentiation in its unidirectional internal connectedness, first increases the number of points at which small disturbances may occur, and thereafter enlarges the scope of their effects to a scale proportional to the magnitude of the whole. Since these effects must be contained within a closed system, single events are, as the result of induction which takes place from the power field of the whole, endowed with the potentiality of disrupting the cycle. No matter that this potentiality is realized only in the extreme case; disturbance is always experienced to some extent under pressure of this potentiality. Stress arising from this pressure itself

produces fresh disturbances. Measures necessary to prevent these from still further spreading absorb a correspondingly greater amount of the available concern and energy.

3. Variations in the Level of Functioning

It has been mentioned that a characteristic of bad conditions and bad work is their uneven distribution—not only between different faces, but also over different sections and among different tasks within the same face (see *Table II*). The consequence is an uneven level of functional efficiency, more generally lowered also by the magnified resonances and induced pressures described above. The atmosphere of uncertainty thus created arouses the expectation in the individual that bad work done by someone else will increase his own difficulties, or that some untoward event will occur to keep him down at the end of his shift. The resulting attitudes and suspicions are ingrained in the culture of the longwall work group and adversely affect the entire pattern of relationships at the coal-face.

No systematic survey of the incidence of cycle stoppages was possible within the limits of the present study. But on one of the best faces known at first hand by the writers it was a matter of self-congratulation that the fillers had failed to fill off only three times during the past year. Experienced informants gave once in two months, or five or six times during the course of a year, as a more usual frequency, with instances of many more stoppages in " bad faces " in " bad pits ". If one week's work is commonly lost in this way during a year, the overall loss in production would amount to some 2 per cent. This relatively low figure expresses the extent of the efforts made to check disturbances short of the point where the cycle is stopped.

4. The Strain of Cycle Control

The main burden of keeping down the number of cycle stoppages falls on the deputy, who is the only person in the face area with cycle, as distinct from task, responsibility. Discussion with groups of deputies readily yields evidence of the strain involved. A common and reality-based complaint is that the authority of the deputy is incommensurate with responsibility of this order. The background to this complaint is the fact, noted in the discussion of the hand-got systems, that, in view of the darkness and the spread out character of the work, there is no possibility of close supervision. Responsibility for seeing to it that bad work is not done, however bad the conditions, rests with the face-workers themselves. But the responsible autonomy of some, especially, of the occupational sub-groups has been impaired in the longwall method. This problem will be taken up in succeeding sections.

As a result, management complain of lack of support from the men, who are accused of being concerned only with their own fractional tasks and unwilling to take broader cycle responsibility. The parallel complaint of the workers is of being driven and tricked by management, who are resented as outsiders—intermittent visitors and " stick " men, who interfere without

sharing the hard, physical work and in-group life of the face. On occasions, for example, the deputy is reduced to bargaining with the men as to whether they will agree to carry out essential bye-work. The complaint of the men is that deputies' promises are rarely kept, and that they have gone unpaid too often to be again easily persuaded. The deputy's answer is that the under-manager or manager has refused to uphold his case. Whether he presented it, how he presented it, or what reasons may have dictated the managerial view are a type of issue on which effective communication back to the man breaks down. The deputy has equally little chance of increasing the insight of the workmen into their own tendency to drive sharp bargains.

The strain of cycle control tends to produce a group " culture " of angry and suspicious bargaining over which both management and men are in collusion. There is displacement both upwards and downwards of the tensions generated. The " hell " that breaks loose in the under-manager's office when news comes in that the fillers are unlikely to fill off in one or more faces resounds through the pit.

5. The Norm of Low Productivity

In all work at the coal-face two distinct tasks are simultaneously present; those that belong to the production cycle being always to some extent carried out on the background of a second activity arising from the need to contend with interferences, actual or threatened, emanating from the underground situation. The activity of the " ground " has always to be dealt with, and ability to contend with this second or background task comprises the common fund of underground skill shared alike by all experienced face-workers. This common skill is of a higher order than that required simply to carry out, as such, any of the operations belonging to the production cycle. For these, initial training is short, and may be measured in months; it is longest for those, such as cutting, where the engineering component is largest. But the specifically mining skill of contending with underground conditions, and of maintaining a high level of performance when difficulties arise, is developed only as the result of several years of experience at the face. A work-system basically appropriate to the underground situation requires to have built into its organisation the findings of this experience. Unless this has been done, it will not only fail to engage the face-worker to the limit of his capabilities, but will restrict him to a level of performance below his potentiality.

The evidence suggests that the longwall method acts in this way. The crises of cycle stoppages and the stress of the deputy's role are but symptoms of a wider situation characterized by the establishment of a norm of low productivity, as the only adaptive method of handling, in the contingencies of the underground situation, a complicated, rigid, and large-scale work system, borrowed with too little modification from an engineering culture appropriate to the radically different situation of the factory. At the time the longwall method developed, there were no precedents for the adaptive underground application of a machine technology. In the absence of relevant

experience in the mining tradition itself it was almost inevitable that heavy culture-borrowing of this kind should have taken place. There was also no psychological or sociological knowledge in existence at that time which might have assisted in lessening the difficulties.

As regards the special difficulties which stem from the large-scale character of the longwall production unit, it may be noted that less acute problems appear to have arisen at equal or even higher levels of mechanization, with room-and-pillar techniques. Here the scale of operations is less, in view of the shorter expanse of the faces ; while adaptability to the changing circumstances of underground conditions appears to have been correspondingly greater. It must not, however, be inferred from room-and-pillar experience that the development of a high level of functional efficiency is impossible in a large-scale mechanized unit ; rather, that the problems presented are more difficult. The difficulties occur very largely in the field of social organization. In the succeeding sections consideration will be given to problems of group relationships in the various occupational sub-groups of the longwall system.

V

THE SPECIAL SITUATION OF THE FILLING SHIFT

1. Isolated Dependence

Relationships between members of the filling shift are characterized by an absence of fuctional interdependence, which arises from the absence of role differentiation in the twenty identical tasks performed by the shift aggregate. The filler is the modern version of the second collier of the older hand-got systems, whose hewer has departed to the cutting shift. While his former mate has acquired a new partner in the back man on the coal-cutter, and is serviced by a new group of labourers—gummers, as distinct from trammers—the filler is alone in his stint, the dimensions of which are those of the short face formerly worked in common. The advent of mechanization has changed but little the character of filling, except that the filler has, in his air pick, the assistance of one power-driven tool and, instead of a hand-pushed tub, a mechanically driven conveyor on to which to load his coal.

The effect of the introduction of mechanized methods of face preparation and conveying, along with the retention of manual filling, has been not only to isolate the filler from those with whom he formerly shared the coal-getting task as a whole, but to make him one of a large aggregate serviced by the same small group of preparation workers. In place of an actually present partner, who belonged to him solely as the second member of an interdependent pair, he has acquired an " absent group ", whom he must share with nineteen others. The temporal distance separating him from this absent group is increased by the interval of the ripping shift.

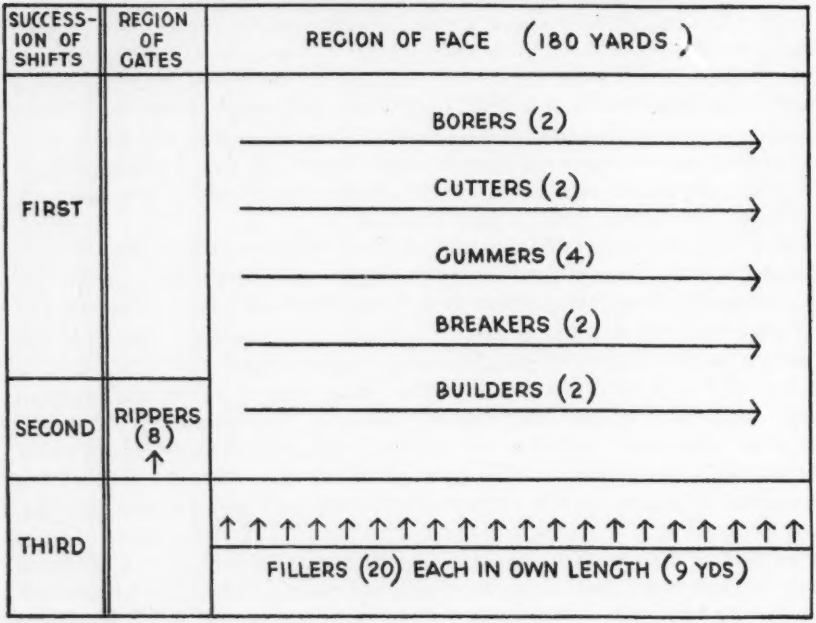
The preparation group itself is so loosely organized that its boundaries are difficult to determine. If thought of as centred on the two cutters, the extent

of the filler's dependence on earlier activities is such that the cutting group must be expanded to include the two borers as well as the four gummers. Since in addition he is dependent on the belt-men, these latter, representing transformed but likewise absent versions of trammers formerly under his own eye, must also be included in his absent group. While, in the time perspective of the present, the filler has no relationships of functional interdependence with other fillers on his own shift, in the time perspective of the past he must contend with a complex set of dependent relationships with the entire series of preparation workers who have preceded him in the face. These relationships are dependent rather than interdependent since, within a given cycle period, they operate only in one direction.

Though, from the filler's point of view, preparation personnel form a total group in virtue of their common relation to him, they do not for this reason constitute an organized group with respect to each other. The structure of their own relationships is that of a series of self-enclosed interdependent pairs, whose connection with each other is small compared with their common connection with him. In this series the cutters form a pair of the extended type with the four gummers loosely attached. But gummings "left in" cause no difficulties for the cutters; and, though antecedent, the work of the borers also causes them no difficulties. On the next shift, the belt-builders complete the second part of an overall conveyor task begun by the breakers, but the work of this team is not affected by the level of performance of those who prepare the coal-face. A series of absent pairs, on each and all of whom one is dependent, but themselves not reciprocating this dependence and remaining relatively independent of each other, constitute a difficult group with whom to enter into a working relationship. This difficulty is increased by the fact that their services have to be shared among nineteen others, who are in the position of rivals for the receipt of preferential attention.

Difficulties are increased still further by the fact that the concern of this succession of pairs is with the entire 180–200 yds. of the face. For them the face is a single continuous region, whereas for the fillers it is differentiated into a series of short adjacent sections. For the individual filler it is the 8–10 yds. of his own length. In the corner of this length he usually chalks up his name, but these chalk marks mean little more than just the name to traversing pairs, to whom individual fillers are personally little known. The structure of the preparation tasks as continuous activities covering the entire expanse of the face gives the succession of traversing pairs no functional relationship with the discrete tasks of individual fillers. The absent, internally disconnected group on which he is dependent takes no functional cognizance of the existence of the filler as an individual. In view of the far-reaching community, as well as work, separation that exists between the preparation and the filling shifts (produced by the time-table arrangements), actual cognizance tends also to be minimal. The pattern of these relationships is shown in *Figure 3*, where the picture presented is one in which, within the period of a given cycle, the fillers are left "alone with each other" and at the mercy of the rest.

FIGURE 3. POSITION AND LOCOMOTION OF SUCCESSIVE GROUPS OF FACE WORKERS ON THE LONGWALL.



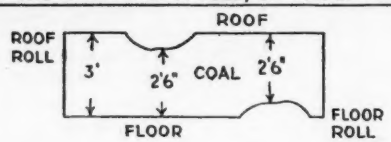
2. Unequal Men with Equal Stints under Unequal Conditions

The fillers, as has been shown, have no secure relationships in face of the differential incidence of the bad conditions they may encounter or of the bad work they may inherit from the preparation workers on whom they are dependent. The men who face these unequal conditions are themselves unequal ; but the lengths of face they clear are the same. The detailed implications of this situation are set out in *Table II*, where the differential incidence of some of the most common types of bad conditions and of bad work, in the different lengths of a typical face, is shown in relation to the variations in skill, conscientiousness, and stamina in a typical group of fillers, fractionated into informal sub-groups interspersed with isolates.

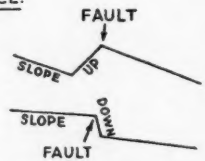
The local arrival of certain types of bad conditions, such as rolls that move across the face, can be anticipated, so that anxiety piles up. The passage across a face of a roll that continues for different periods of time in various lengths is shown in *Figure 4*. As regards bad work left by the other shifts, the filler is in the situation of never knowing what he may find, so that anxiety of a second kind arises that tends to produce chronic uncertainty and irritation. There is little doubt that these two circumstances contribute to the widespread

FIGURE 4. THE COURSE OF A ROLL, OR FAULT ACROSS A LONGWALL FACE.

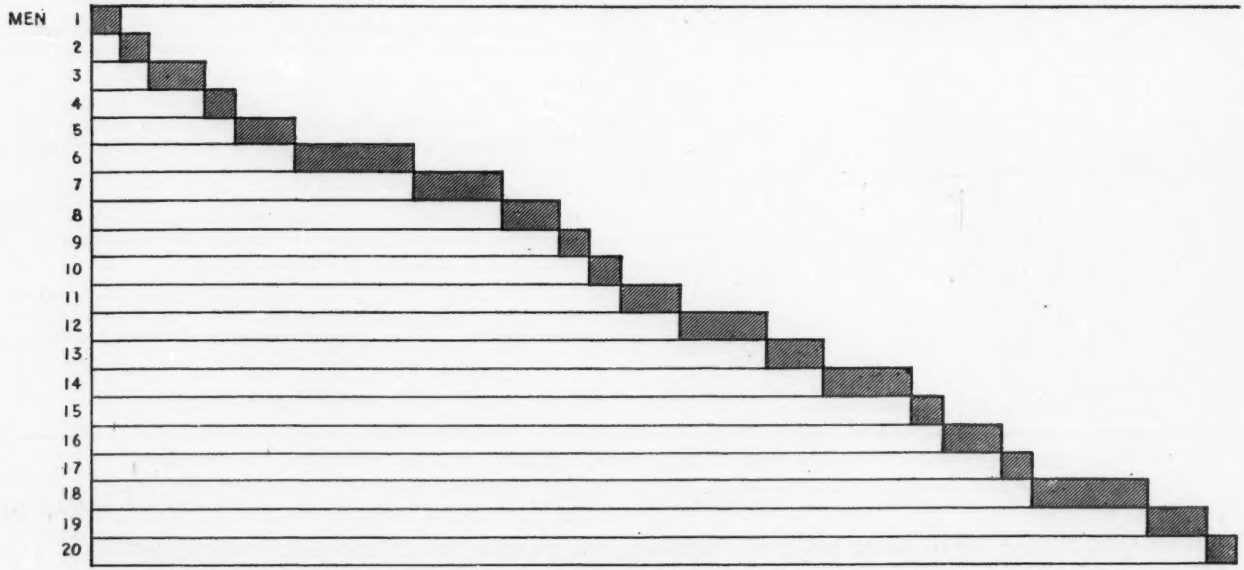
A ROLL IS A RAPID DEVELOPMENT IN EITHER THE ROOF OR THE FLOOR TEMPORARILY REDUCING THE DEGREE OF THICKNESS OF THE SEAM.



A FAULT IS A SUDDEN CHANGE IN THE SLOPE OF THE SEAM, UP OR DOWN.



SHIFT NUMBERS.



THE SHADED PORTIONS SHOW THE NUMBER OF SHIFTS DURING WHICH THE ROLL OR FAULT STAYS IN THE LENGTH OF A PARTICULAR MAN.

TABLE II

Cumulative and Differential Incidence of Bad Conditions and Bad Work in the Filling Shift

(This table has been built up as a " model " of the situation from the experience of a group of face-workers who acted as informants. It relates the effect of bad conditions and bad work, traversing the face unevenly, to the unequal personal and group qualities of the fillers.)

× indicates local distribution of difficulty in typical examples of different kinds of bad conditions and bad work.

Types of Adverse Factor	*Positions Across the Face of 20 Fillers*																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Loose roof—roof broken up by weight or natural " slips " (cracks) making it difficult to support ; extra time required for timbering reduces that for filling.				×	×	×				×				×	×	×				
Faults—sudden changes in slope of seam either up or down, producing bad conditions capable of anticipation, possibly lasting over a considerable period.	×	×																		×
Rolls—temporary unevenness in floor or roof reducing working height and producing severely cramped conditions in thin seams. As above for anticipation and duration.	×				×										×					
Roof weight—roof sagging down—especially in middle positions along the face where weight is greatest ; not dissimilar to above in effect.					×	×	×								×	×	×			
Rising floor—from natural bad stone floor, or from the cut having been made into the coal so that the gas in the coal lifts up the floor, or from naturally inferior coal which is left down but which lifts (gas).				×		×								×	×					
Bad boring—holes bored short so that coal at the back of the undercut is unaffected by shot (hard backs) ; heavy extraction task with air pick at end of shift, when tired ; or holes too low, so that shot leaves coal clinging to roof (sticky tops). Both these conditions tend to occur through naturally hard coal and certain types of roof.					×							×						×		

Uneven cut—from the coal cutter having gone up into the coal. This reduces the filler's working height, cf. rolls, and the tonnage on which his wages depend. Also, as with rolls, faults, etc., it means that 3-ft. props have to be inserted in 2-ft. 6-in. height, which means sinking them in floor (dirting props) as an additional unremunerated task.	x				x					x	x						x			x
Gummings left in—failure on the part of the gummers to clear coal from undercut so that coal cannot drop and shot is wasted. The result is a solid mass of hard coal, requiring constant use of air pick and back-breaking effort. The amount left in varies.				x	x	x				x	x			x				x		x
Belt trouble—the belt may not have been set in a straight line, or bad joints may have been made, or it may not have been made tight enough. On top-delivery belts coal going back on the bottom belt very soon stops it. Belt stoppages may produce exceedingly awkward delays, especially if conditions are otherwise bad.					x	x	x	x												
* Total	3	1	–	3	7	5	2	1	–	3	2	1	–	3	4	2	2	2	–	3
** Skill	+			+									–	+		–		–		+
** Stamina				+			–								–			–	+	
** Conscientiousness				–											+			–		
*** Sub-group membership	a	a	a	I	b	b	I	c	c	c	d	d	I	e	e	e	e	I	f	f

* These numbers simply indicate the fact that several different kinds of things often go wrong in the same length. Severity varies. At one extreme there may be a series of minor nuisances, at the other one major interference. When conditions seriously deteriorate the interaction of factors and effects is such that some degree of disturbance is apt to be felt from most quarters at one or other point along the face.

** Plus or minus ratings have been given for supra- or infra-norm group status on the three attributes of skill, stamina and conscientiousness on the job, which represent the type of judgments of each other that men need to make, and do in fact make.

*** Members of the same informal sub-group are indicated by the same letter; I = Isolate.

incidence of psycho-somatic and kindred neurotic disorders among those concerned.

The degree of stress arising when men experience the full weight of this situation could have been explored only in a therapeutic relationship. But many instances were given of neurotic episodes occurring on shift—of men sitting in their lengths in stony silence, attacking their coal in towering rage, or leaving the face in panic. In a situation of dependent isolation with the odds unequal both as regards his own resources and what is required of him, the individual inevitably erects protective defences, and these are elaborated and shared in the work group. An account of the main pattern of group defences will now be given. These defences are reactive rather than adaptive. Their effectiveness therefore is only partial. But without them life at the longwall would be intolerable for all but those whose level of personal adjustment is rather better than that attained by most individuals in the course of their development.

VI

FOUR TYPES OF GROUP DEFENCE

1. Informal Organization

The functional isolation of the filler within his own group, which leaves him " officially " alone with his " coals ", is met by an attempt to develop informal, small-group organization in which private arrangements to help each other out are made among neighbours, in twos, threes, or fours. But these solely interpersonal arrangements are undependable and open to manipulation for anti-social and competitive as well as for mutually protective ends. A number of isolates is left over. The total face group is incapable, except defensively, of acting as a socially responsible whole, since not even private allegiances are owed outside the small informal groups. These in turn are without responsible autonomy ; the absence of institutionalized mutual obligation means that there are no statutory group tasks, and each individual can be held ultimately responsible only for clearing his own length. Internal " rows " the more easily break up the informal " coalitions ", whose morale tends to be of the clique type.

Examples were, however, given to the writers of stable groups who stuck to each other and worked well over long periods. One informant said of these : " Here things are more like the old times in the pit ". Groups of this kind were envied and also criticized for being " too close ". They appeared sometimes to be held together by a natural leader, and at others to be made up of individuals of generally good personality. Most informants were agreed that there was a tendency for the extremes to sort themselves out ; there were " good " and " bad " faces as well as " good " and " bad " cliques within a particular face aggregate. But all this happened as it might. There was no support from the system.

Isolates, it appears, are either individualists—who " won't even share timber "—or men with bad reputations, with whom others refuse to work. Amongst these are the unconscientious—who " won't help out at the end of a shift " and who are frequently absent—and the helpless—who " cannot learn to look after themselves under bad conditions ". Others, whose stamina is deficient (whether through age, illness, or neurosis) and whose lengths are often uncleared in consequence, are dropped from the informal groups.

Only to a very limited extent, therefore, does his informal group organization meet the filler's need for a secure role in a primary group within his own shift. In view of the extent of his dependence on the performance of those in the other two shifts, his need for this foundation is greater than that of any of the other occupational groups, while the resources available to him are fewer.

2. Reactive Individualism

His small group failing, the filler is thrown on to himself and against others. The second defence against isolation is the development of a reactive individualism, in which a reserve of personal secrecy is apt to be maintained. Among his own shift mates there is competitive intrigue for the better places—middle positions are avoided ; from these " it is a long way to creep "—and for jobs in workings where conditions are good there is a scramble.

On some faces described to the writers, fear of victimization was rife, particularly in the form of being sent to work in a " bad place " ; the deputy being more easily turned into a persecutor in view of the guilt arising from the intrigue and deception which the men practised both against him and against each other. Against the deputy, advantage is taken of the scope afforded in the underground situation for petty deception over such matters as time of leaving the pit, or the " measure that is sent up " (amount of coal filled on to the conveyor). With the deputy, however, men are also prepared to enter into alliance against each other, often for very good reasons—to stop mates from going absent and by so doing throwing more work on to the others.

As regards outside groups, practices of bribing members of the other shifts in the hope of getting a " good deal " in one's own length were mentioned by several informants. Tobacco is taken to the cutter ; gummers are stood a pint on Sunday. These practices are to be regarded as symptoms of a state of affairs rather than as widespread in themselves.

The effect of this defensive individualism is to reduce the sense of secure identification in the larger pit collectivity, which was the second principle on which the older equilibrium was based.

Nowhere is the mistrust that shift mates have of each other more in evidence than in controversies over bye-work " slipping off the note ". On what is referred to as the " big note " is entered all the contract and bye-work done during the week by the shift aggregate. This note is issued to one man called " the number man " since he is identified by his check-

number. In no sense is this individual a representative appointed by his mates. Only rarely is he an informal leader. Customarily he is a " corner man ", whose length adjoins the main gate, i.e., the man most conveniently within reach of the deputy. When asked about bye-work he does not always know what has been done at the far ends of the face and he is under no obligation to stop his own work to find out. But though a number of men will grouse about their pay being short, mentioning this or that item as having " slipped off the note ", very few ever bother to check up. There are men who have worked on a face for three or four years and never once seen their own big note. Yet these are among the more ready to accuse the corner man or the deputy. The corner man is suspected at least of never forgetting to make the most of his own assignments. To the deputy is ascribed the intention of keeping the costs of his district down. Conspiracy between the two is often alleged. Only when a major rumpus occurs are such suspicions put to the test, but showdowns of this kind are avoided as apt to peter out in squabbles proving nothing.

The competition, intrigue, unwillingness to put allegations to the test and the reserve of personal secrecy, are parts of one pattern. Whatever their personal wishes, men feel under pressure to be out for themselves, since the social structure in which they work denies them membership in any group that can legitimize interdependence. In this respect reactive individualism makes a basic interpretation of the social structure of the filling shift and is the only form of authorized behaviour.

3. Mutual Scapegoating

Fillers almost never see those who work on the " back shifts ", and this absence of contact gives full scope for mutual and irresponsible scapegoating. When there is a crisis, and the filling shift is unable to fill off, the " buck " is passed to the other shifts—or vice versa if disorganization has occurred elsewhere. It is frequently also passed to the deputy, who is blamed for not finding substitutes, and to repair men, brought in, but too old to stand the pace.

For these to pass the buck back to the fillers is fruitless. As they do not exist as a responsible whole, they, as a group, are not there to take the blame, and the individual filler can always exempt himself. Since bad conditions and bad work interact so closely, it is usually difficult to pin blame specifically. Mutual scapegoating is a self-perpetuating system, in which nothing is resolved and no one feels guilty. For all concerned to remain in collusion with such a system is a defence which allows each to make his " anonymous contribution " to the " group mentality ", (4) which sabotages both the goal of cycle productivity and the needs of the individual for a membership in a satisfying work-group. So far as this pattern obtains, all strike at each other in a mock war in which no one is hurt yet all suffer.

This defence can also be seen as a " back-handed " attempt to recover the supportive unity lost through reactive individualism in a way that is consis-

tent with it. For all to be "in the bad" together is at least a way of being together. If one's contribution to a group is to help carry the badness of others, the group's contribution to oneself is to allow one to leave some of one's own badness in the group by being granted, for example, the privilege of withdrawal so that one's absence is sanctioned on a fair share of occasions. This "formula" provides a workable scheme since the tacit agreement is only too plausibly maintained that the badness both of the group and of the individual are exclusively effects of the system which the group is compelled to operate without having power to change, i.e., these effects are regarded as "induced" rather than also as "own" forces. The group and the individual can therefore deny and get rid of their own badness by ascribing it to the system. The good of the group becomes its power to preserve the good of individual members by limiting the degree of their exposure to the bad system. The alternative would be constructive limitation of its real deficiencies so that it might be operated with more productive results and a higher degree of mutual satisfaction.

Not that the system is felt as entirely bad since it is the means by which a living is earned. Moreover, under present conditions this living is a good one, both in terms of wages and of community status. But the benefits which these "goods" bring are not realized in the work activities of the group. They lie outside the work system, which is tolerated as a means to external ends rather than accepted also as an end in itself, worthy of wholehearted pursuit in virtue of the internal satisfactions it affords. When these different aspects of the matter are put together the expectation emerges of a balance being struck which would allow things to tick over, though with a degree of social illness costly alike to productivity and to personal well-being. This expectation accords with reality.

4. Self-Compensatory Absenteeism

Withdrawal is the fourth form of defence, complementing mutual scapegoating, and absenteeism is to be regarded as a recognized social technique within this pattern. For example, one filler, returning from his week's holiday with pay, complained that the first two shifts had "knocked it all out of him". The gummings had been left in. His coal was solid. He had had the air-pick on all day. "I've tried cursing 'em but it's no use, and pleading with 'em but it's no use. I'll take a day off for this."

When conditions on a face deteriorate, especially in ways that are predictable, absenteeism among fillers sometimes piles up to a point where the remainder have to stay down an extra two or three hours in order to clear the face. Should this situation repeat itself for more than a day or two, those coming on shift often meet at the pit-head baths before presenting themselves for work. If less than a certain number arrive, all go home.

Absenteeism of this self-compensatory type, though carried out as an act of aggrieved defiance against a system, felt in these circumstances as persecutory, is an attempt on the part of the individual to prolong his work life at the coal-

face. For without the respite of occasional absences, he feels that he would soon become unable to carry on. In view of the accentuated differences both in wages and in status between face workers and repair, haulage, or surface personnel, the goal of remaining at the coal-face for as long as possible would appear to operate as a powerful motivational force in determining the behaviour of the ordinary face-worker.

The following is some of the material obtained in interviews and discussions. Fear of being "too old for the face at forty", or even thirty-five, was a frequently expressed anxiety, made more acute by personal experience of the painful tensions in miners' families, where a father relegated to the surface at £5 19*s.* 3*d.* a week must face a son, still in his early twenties, earning more than twice this wage. Instances were reported of quarrels between brothers, among whom long-standing but mild neurotic rivalries had existed, that severely disturbed the larger family when the older, through sickness, often of a psycho-somatic kind, had been forced to leave the face. In the culture of the mining family a face-worker husband is the object of special care on the part of his wife. There were men who felt that the privilege of this care, the emotional need for which was now stronger, was no longer merited once their *élite* position had been forfeited and their potency as bread-winners reduced. The dilemma of this situation is that fear of the loss of this care and acceptance of its continuing offer are both unbearable.

Absenteeism of this self-compensatory type is a socially structured activity operated in accordance with a complex code that governs both the occasions and amounts regarded as permissible. It is a psycho-social defence motivated by the wish to remain at the coal-face, and is a species of "institutional" conduct with a functional role in the total social system in which the longwall method plays a central part.

This, and the other three defences discussed, play a dynamically interrelated part in forming the culture [5] of the work group, though naturally the intensity to which the pattern is present varies widely, and there are faces where the group atmosphere remains for long periods relatively immune from these influences. These are apt, however, to be "fair-weather" faces.

The danger is that habituation to working in a bad system has the compensation of enabling those concerned to leave too much both of their own and of their group's "badness" *in the system.* It then ties them to it through the fact that it does this, despite their hatred of it. As well as its faults, it is their own hatred that they hate in the system—and there is usually stubborn refusal to recognize such projections in work- no less than in therapy-groups. A characteristic of faces with a bad group atmosphere is the protesting yet excited

[5] The concept of "culture" as a psycho-social technique developed by a group in a structurally determined situation has been outlined by Trist, "Culture as a Psycho-Social Process", contributed to a symposium on The Concept of Culture, British Association, Section (H), Anthropology and Archeology, Birmingham Meeting, 1950. This viewpoint develops that of Curle, and Curle and Trist, "Transitional Communities and Social Re-connection", *Human Relations*, Vol. I, No. 1, pp. 42–68, and No. 2, pp. 240–288; and is akin to that of Ruesch, "Experiments in Psychotherapy, II: Individual Social Techniques", *The Journal of Social Psychology*, 1949, 29, 3–28; and Ruesch and Bateson, "Structure and Process in Social Relations", *Psychiatry*, 1949, Vol. XII, 2, pp. 105–124.

collusion of all concerned with the state of affairs. This is in contrast to the more independently critical and realistic attitude of those in groups where the pattern is less complete and less intense.

VII

SOME PROBLEMS OF THE PREPARATION SHIFTS

1. The Absence of Authority in the Cutting Team

As it is on this preparation group—containing the front and back man on the cutter and the four gummers—that the filling shift is most specially dependent, there is special need for social organization to be sound at this point. But the cutting team does not exist officially as a group, since the cutters are on their own note, responsible for, and paid for, their cutting alone. The gummers are not under their authority, and no one except the deputy can take responsibility for any tendency they may have to leave some or all of the gummings in, in certain stints, as they traverse the face. As they are on day wage, they have nothing to lose unless they go too far—so, at least, the fillers feel in their bitterness on this score.

As the lowest paid and lowest prestige group on the face, doing the least skilled task, gummers are both an outcast and scapegoated group. Their work is arduous, dangerous, dusty—and awkward. Hostility in them towards " the system " and towards other face workers is almost inevitable and is most easily displaced on to the fillers, whom they never see but can severely annoy—not necessarily with conscious malice—by leaving in some of the gummings under conditions of fatigue or difficulty. A system that puts this power of interference into the hands of a potentially disgruntled, scapegoated group, with no effective social means of controlling it, fosters the hostile tendencies almost inevitably present. These difficulties are increased by the fact that, among all face workers, status differences are greatest between cutters and gummers and by the fact that the cutters are a closed pair. Tensions within this ambiguously organized group are apt to be sharp.

There are, of course, instances where effective leadership is exercised over the gummers by the front man, and some of these were quoted by informants. But it was stressed at the same time that management could hold the cutters responsible only for the cut, and that to exercise detailed supervision was an impossible task for a deputy, especially on " back shifts " where his territory of responsibility is apt to be more extensive than on day shift. In shift groups where a good spirit of co-operation obtains, the belt-breakers are often willing to help out the gummers. It was suggested that fewer lapses occurred when these interchanges took place. But the pattern of the cutting shift works against such co-operation, consisting, as it does, of four different categories of workers successively traversing the face at their own separately institutionalized component tasks, with no overall goal to bind them together and no functionally defined responsibilities to each other.

So closely tied, however, are the cutting and gumming operations that they cannot in practice be treated as separate. Hence arises the dilemma of the team that is at the same time not a team. Given a work system with a different type of culture there might be no problem, but given longwall separatism there would appear to be no solution—until new conceptions of relationship emerge.

Some instances were quoted of gummers being paid by the front man, who could therefore be penalized for gummings left in by having money stopped out of his contract. But it was pointed out that this sanction could be applied only in cases of the grossest kind which the deputy would in any case pick up, and that it tended to place cutters in the hands of their gummers. This suggests that the persistence or resuscitation of the old forms of contract are not in themselves enough to restore responsible autonomy.

2. The Split-Off Position of the Inter-dependent Pairs

Superficially, borers, belt-builders, and belt-breakers look like pair structures that echo those of pre-mechanized days. But whereas the pairs of hand-got coal-getting had craft status and an artisan type of independence in working their own face, with the satisfaction of seeing through the whole coal-getting job, these longwall pairs are restricted to work tasks of a singularly narrow component character.

The borers are off by themselves ; and as regards the belt workers, since breakers and builders are on different shifts, neither can feel the satisfaction of accepting responsibility for the conveyor system as a whole.

The most fractionated tasks are therefore performed by those restricted to the narrowest relations. It would be difficult to imagine a situation in which they were more completely split off from any sense of belonging to a shift or total production group. But they are at least responsible to each other and are based on a stable, if narrow, relationship.

3. The Social Viability of the Ripping Team

By contrast, the ripping team is a well-organized primary work group of 7 or 8 with an intelligible total task for which it carries complete responsibility. Rippers are frequently referred to by others as a " good crowd " who seldom " go absent on each other ". Pride of craft is considerable. A main ripper and—usually—individuals of very varying experience compose the group, but it appears to manage its internal relationships without status difficulties. Here, responsible autonomy persists.

Unfortunately, like the other face-work groups, it is a group by itself and there is as a result no transfer of its more stable morale to other groups in the system. Working, as it does, in the main and side gates, it is felt to be a closed group very much apart from the main interaction between the preparation and filling operations carried out in the face itself.

In all essential respects the ripping team represents a survival of the hand-got past in the mechanical present. For the gates in which ripping parties

of varying sizes operate are, as it were, their own " stalls ", continuously and autonomously worked. All relevant operations are carried out within the group which completes them within the compass of one shift. Rippers have escaped from, rather than become part of, the longwall system, retaining intact their total task, their multiple skills, their artisan independence, and their small group organization. They work in the gates. Though part of the total layout, gates are not like a longwall face. In the gates the scale of the task remains small ; the spatio-temporal structure is simple, and methods are unmechanized. Changes consequent on the introduction of power-driven tools, or of steel replacing wood, have been assimilated without essential re-structuring.

In the face, it was the introduction of machines (still foreign to the gates) that caused the appearance of a new order, changing the scale to mass production and bringing fractionation of tasks, extension of sequence, role and shift segregation, small group disorganization and inter-group dependence. In the gates the old order continues in a special setting. To compare the two one needs only to step from gates to face. Those in the face once fared as well as those in the gates.

VIII

CONCLUSIONS

The fact that the desperate economic incentives of the between-war period no longer operate means a greater intolerance of unsatisfying or difficult working conditions, or systems of organization, among miners, even though they may not always be clear as to the exact nature of the resentment or hostility which they often appear to feel. The persistence of socially ineffective structures at the coal-face is likely to be a major factor in preventing a rise of morale, in discouraging recruitment, and in increasing labour turnover.

The innovations in social organization of face-work groups, which have begun to appear, and the success of some of these developments, suggest that the organizational changes brought about by nationalization provide a not inappropriate opportunity for the experimental working through of problems of the types which have been indicated. It can certainly be said with some confidence that within the industry there exist the necessary resources and creativity to allow widespread constructive developments to take place.

As regards the longwall system, the first need is for systematic study and evaluation of the changes so far tried.[6] It seems to the present writers, however, that a qualitative change will have to be effected in the general character of the method, so that a social as well as a technological whole can come into existence. Only if this is achieved can the relationships of the cycle work-group be successfully integrated and a new social balance be created.

[6] One of the most interesting of these is " An Experiment in Continuous Longwall Mining at Bolsover Colliery ", W. V. Sheppard, The Institution of Mining Engineers, Annual General Meeting, Jan. 1951.

The immediate problems are to develop formal small-group organization on the filling shift and to work out an acceptable solution to the authority questions in the cutting team. But it is difficult to see how these problems can be solved effectively without restoring responsible autonomy to primary groups throughout the system and ensuring that each of these groups has a satisfying sub-whole as its work task, and some scope for flexibility in work-pace. Only if this is done will the stress of the deputy's role be reduced and his task of maintaining the cycle receive spontaneous support from the primary work groups.

It is likely that any attempts in this direction would require to take advantage of the recent trend of training face-workers for more than one role, so that interchangeability of tasks would be possible within work teams. Moreover, the problem of shift segregation will not be overcome until the situation is altered in which one large group is permanently organised round the day shift and the others round the back shifts. Some interchange between roles in preparation and filling tasks would seem worth consideration. Once preparation workers and fillers could experience each other's situations, mutual understanding and tolerance would be likely to increase.

It is to be borne in mind that developments in room-and-pillar methods appear to be stressing the value of the strongly-knit primary work-group and that the most recent advances in mechanization, such as power loaders or strippers, both require work teams of this kind.

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BIOGRAPHICAL NOTE

E. L. Trist. Notes on this author have appeared in Vol. I, No. 2, and in Vol. III, No. 4.

K. W. Bamforth comes from a mining family and spent the first eighteen years of his working life at the coal-face. Through the W.E.A. and his trade union he obtained a scholarship to Leeds University, where he graduated in economics and industrial relations. His thesis was on the wage-structure of the coal industry. He carried out his work for the present study while an Industrial Fellow at the Tavistock Institute, under the scheme arranged with the Human Factors Panel for post-graduate training in fieldwork in group relations. He is now Group Relations Officer in a large firm in the north of England.

COMMUNICATION IN EXPERIMENTALLY CREATED HIERARCHIES[1]

HAROLD H. KELLEY

Only recently have there been systematic investigations of the factors determining the initiation, content, and direction of communications within small face-to-face groups. As an extension of one rather intensive program of research in this area (4), the present study was executed to explore communication phenomena in experimental groups differentiated into high-status and low status[2] sub-groups.

The importance of research on the problem of status-differentiation lies primarily in the numerical predominance in our culture of hierarchic groups over undifferentiated ones. Certainly, for our generalizations about communication processes to be of much practical value, they must extend to groups differentiated in many distinct ways. Of theoretical significance is the fact that, in dealing with hierarchic groups, we are forced to integrate a number of basic group psychological concepts: power, valence of position, group structure, and locomotion within the group.

Two prior investigations suggest some tentative hypotheses about communication within hierarchies. In the first of these, Thibaut established high- and low-status levels by favoring the Highs and discriminating against the Lows (6). He studied the effects of this treatment upon sociometric choices and communication between levels. We shall later discuss some of his findings regarding cohesiveness, and compare them with our own. As the discrimination in favor of the high-status sub-groups proceeded, the Lows increased in the total amount of communication addressed to the Highs, but decreased in the proportion which was aggressively toned. One explanation advanced for these trends was that the upward communication served as a substitute for blocked upward locomotion. As the possibility of actually

[1] This study was conducted as part of a program of research in social communication at the Research Center for Group Dynamics, University of Michigan. This program is sponsored by the Office of Naval Research, Contract N6 onr—23212 NR 170 698. The author is indebted to Professor Leon Festinger, director of the program, for many helpful suggestions.

[2] In our use of the concept, "status", we shall not attempt to depart from, or to purify, its present meanings. We use it to refer to the combined valence, power, and prestige properties of a sub-part of a group. A high-status position is one which affords to the occupant a pattern of activities, roles, privileges, duties, and powers which, by comparison with similar patterns for other positions, are generally deemed to be more desirable and satisfying.

locomoting upward decreases, it is supposed that low-status persons increasingly resort to communication to high-level persons as a substitutive means of satisfying their locomotion desires.

The second relevant study involved an analysis of the direction, whether upward or downward, in which planted rumors were transmitted within an existing hierarchic organization (1). Although tentative, the general findings pointed toward the existence of unusual forces to communicate upward, these again being thought to indicate the substitute value of communication for locomotion. There were also indications of strong restraining forces acting against free communication of specific kinds of content such as, for example, information critical of persons at the upper levels.

The general kinds of hypotheses indicated by these studies formed the broad theoretical focus for the present study. Our purpose was to determine some of the driving and restraining forces which act upon various communication content in a group by virtue of that group being structured as a status hierarchy.

DESCRIPTION OF THE EXPERIMENT

Our method was to analyze the communication output of group members in high- and low-status positions, with and without the possibilities of locomotion between levels. Four combinations of status and locomotion possibilities were used: 1. high-status, non-mobile, *HNM*; 2. high-status, *downward* mobility possible, *HM*; 3. low-status, non-mobile, *LNM*; and 4. low-status, *upward* mobility possible, *LM*. A fifth variation, with no status differential and non-mobile, served as a control group, *CNM*. These five treatments, while representing only a sample of the possible variations, seemed most appropriate for an exploratory study.

Subjects and Experimental Procedure

All subjects were volunteers from second- and third-year college courses in psychology, sociology, and education. The five treatments included the following numbers of men and women: *HNM*, 13 men and 10 women; *HM*, 13 men and 9 women; *LNM*, 18 men and 7 women; *LM*, 18 men and 11 women; and *CNM*, 13 men and 6 women.[3]

Eight persons met at each experimental session, all of the same sex, and none having more than passing acquaintance with each other. They were given, although in somewhat more extended form, the following introductory instructions:

> "The purpose of this experiment is to determine how well a group of people can perform a complicated task when the possibilities for communication among them are limited to written messages. Your group will be divided into equal-sized sub-groups, working in separate rooms. The first of these sub-groups will be given a specific pattern of rectangles. They will write messages to the second sub-group in the adjoining room

[3] Because no consistent or meaningful sex differences appeared, we shall present only data for men and women combined.

so as to enable the latter group to reproduce the pattern by placing bricks in proper position on the floor. All communications between and within the two sub-groups will be restricted to written messages, each addressed to a single specific person (designated by letters and numbers) and identified as to sender. All messages will be delivered first to a connecting hallway where we will record the time on them before delivering them to the proper persons. You may write messages about anything you wish. Your task is simply to work together so as to reproduce quickly and accurately in one room the pattern given in the other room."

After receiving these initial instructions, the two sub-groups went to their respective rooms and independently received further instructions calculated to produce the variations in status and mobility. These instructions we shall describe presently. Unknown to the subjects, both sub-groups were given the same task of laying bricks in response to messages apparently coming from the other room. These messages, as well as messages supposedly coming from within the same sub-group—i.e., all communications received by each subject—actually comprised a standard set of stimulus messages prepared before the experiment. Supposedly from the other sub-group, each person received eight messages containing instructions for placing bricks, and six containing irrelevancies—inquiring about their task; wondering about the real purpose of the experiment; suggesting getting better acquainted; expressing dissatisfaction with the job; and criticizing the addressee. Supposedly from his own sub-group, each person received six irrelevant messages —suggesting getting acquainted; wondering about the other job; and expressing discontent with their own job, the other group's efforts, and the experiment in general.

Each of the four persons in a given sub-group received a different set of instructions for placing bricks, but all received the same irrelevant messages. The delivery times of the messages were staggered, so that the four persons would not simultaneously receive the same message at once, which might have aroused suspicion. In general, however, all subjects received approximately the same pattern of communications. From one experimental session to another, identical message content and time and order of delivery were used. Because of this uniformity of treatment, and because there was very little interdependence in their work among the members of a given sub-group (their tasks were restricted to different sections of the room), we may treat our subjects as independent individuals and as the units in our statistical analysis.

All messages written by the subjects were intercepted and preserved. Very few subjects became suspicious of the experimental procedure. Those in whom we detected suspicion were eliminated from the analysis.

Because of these manipulations, the following conditions prevailed in the experiment:

(a) All our subjects were doing the same task: that of following instructions in placing bricks. We had merely to produce differences

among them in their perceptions of the status of their position in comparison to the status of the group of instruction-givers which was psychologically present in the next room. Thus, the experimental task was the same for all subjects regardless of their perceived position in the group and differences among our five variations can not in any way be attributed to differential task requirements.

(b) Because all communication taking place was written, we obtained, in effect, a complete stenographic record of it. We do not know how much the fact of having to write acted to restrict or distort communication. The experimental task was easy enough to allow considerable time to be available for writing messages. The volume of communications resulting from this procedure seems reasonably adequate—approximately 12 messages, or a total of 192 words, per person for the 34-minute period devoted to the task.

(c) The inclusion of irrelevancies among the standard stimulus messages reduced the restraints against communicating content extraneous to the task. This was essential, because our theoretical interests lay primarily in such categories of content. Our content analysis seems to indicate the success of this procedure, since well over half the messages contained some irrelevant material.

Production of Status and Mobility Variations

Just before the task period began, appropriate combinations of the following instructions were given to the sub-groups in order to produce the five experimental variations. These instructions are intended to produce differential perceptions of the "status" of one sub-group relative to the other and of the "likelihood of locomotion" into the other sub-group. In all cases the status instructions were given first and were followed by the mobility instructions.

High-Status: "Let me summarize your job. Your job is to follow their messages as well as possible in placing the bricks. You have the best job and the most important job in the group. You have the difficult task of translating their written messages into an actual pattern of bricks here in this room. This translation requires a great deal of insight, comprehension, and accuracy—and even creativity. Some of their directions are bound to be confused, and you'll have to decide which is the most accurate interpretation of what they say. The success of the group will depend largely upon your decisions. They have the poorer job—the more menial and routine one. You have the difficult problem of interpreting their messages so as to reproduce as accurately as possible the master diagram."

Low-Status: "Let me summarize your job. Your job is merely to follow their messages as well as possible in placing the bricks. They have the best job and the most important job in the group. They have the difficult task of translating the master diagram into words. This trans-

lation requires a great deal of ingenuity and creativity. There are many ways in which they can do it and they have to decide which is best. The success of the group will depend largely upon their decisions. Your job is a poorer one—a more menial and routine one. You are simply to follow their messages so as to reproduce as accurately as possible the master diagram."

Control—no status differentiation : " Let me summarize your job. Your job is to follow their messages as well as possible in placing the bricks. Obviously the two jobs, that of writing instructions from the given pattern and that of placing the bricks, are equally important to the success of the group. Both you people here and the four in the other room have to do your jobs well and accurately if the group is to do well on this task."

Mobility—locomotion into other sub-group is possible : (In parentheses are the alternatives used in the high- and low-status variations, respectively.) " I'm sure you'd find their job to be (less) (more) interesting than your own (but) (and) we may move some of you to the other job during the course of the experiment. We haven't decided yet how many people should be in each room for the most efficiency. So we may have to move some of you to the (poorer) (better) job. The experimenter may come in and move some of you (down) (up) to the (poorer) (better) job in the other room at any time during the experiment."

Non-mobility—locomotion into other sub-group is impossible : (In parentheses are the alternatives used in the high- and low-status variations, respectively.) " I'm sure (they'd) (you'd) find (your) (their) job to be much more interesting than (their) (your) own and we'd like to be able to promote some of (them) (you) to (your) (their) job. But in order for the experiment to work best, we want to let (you) (them) stay on it long enough to get used to it and to be able to do (your) (their) best on it. So we'll have to keep (them) (you) on the poorer job throughout the experiment and let (you) (them) stay on the better one."

Special non-mobility instructions for the control group re-emphasized the equality of the two jobs and ruled out the possibility that there would be any shifting of subjects from one sub-group to the other.

Kinds of data

The basic data consist of the messages written by the subjects. We shall describe the categories into which they were analyzed as we present the comparative results for the five variations. In coding the messages the first consideration was to produce categories that would have bearing on the kind of hypotheses stated earlier. Beyond this, our main concern was to describe the major dimensions of the messages, whether or not we had ideas about how they could be affected by the experimental variations.

After the period allotted to the task, on the pretext that we were going to do another short task of the same kind, the subjects were asked to decide whether they wanted to continue the job of placing bricks or to change to

the job of giving instructions. On the further excuse that two persons in the experimental group had to be replaced, they were asked whether or not they wished to be eliminated themselves, and which other two persons should be eliminated.

Finally, it being decided that the second task should not be attempted after all, they were asked to fill out a sociometric questionnaire on personal preference and contribution to the total group's productivity. This was followed by a group interview consisting of three open-ended questions which, with increasing degree of focus, attempted to ascertain their perceptions of the relationships, status or otherwise, between the two sub-groups.

The experimental session was concluded by assembling the subjects, exposing all the details of the experiment, explaining the general hypotheses, describing the tentative findings from pilot studies, answering the subjects' questions, and requesting that they maintain secrecy about the experiment until its completion.

A diagram was made of the pattern of bricks produced by each subject. By comparing this with the pattern produced if the messages were interpreted accurately, it was possible to determine how many errors each person made in his work.

RESULTS

Evidence on the effectiveness of the experimental manipulations

We may first examine our data to determine whether or not the various experimental instructions produced the intended effects. Although no evidence was obtained with regard to the subjects' expectations about mobility, several kinds of data are relevant to their perceptions of the status of their jobs. In *Table 1* are presented the jobs they chose at the end of the experiment on the pretext of having to do a "second" task. Of those making a choice, the Highs more often than the Lows select the job they've had while the Lows more often choose the other task. This difference is significant at the 5% level of confidence.[4] The Control subjects prefer the other job to about the same extent as do the Lows. Slightly more Lows than Highs wish to have themselves eliminated from the "second" task but this difference is not significant.

In *Table 2* are summarized the responses to the three open-ended questions given at the end of the session and designed to determine perceptions of the status difference. The set of responses for each subject was coded in terms of whether he felt his job to be lower than, or equivalent to, that of the other group. Replies of having a higher job never occurred. It is evident

[4] It was not possible to test the significance of the various differences reported here by a single, standard statistical technique. At various points in the data, special conditions, such as small N's, extreme splits, or skewed distributions have made it necessary to use special methods. In selecting the most appropriate one we have carefully considered the properties of our data and the assumptions involved in the methods. In addition to the standard techniques involving *F*, *t*, and *chi-square*, we have used the exact test for 2 × 2 tables (5), the *F* test for exponential distributions (2), and the *d* test for testing the significance of means without reference to their frequency distribution functions (3).

TABLE 1

Choice of Job for "Second" Task

Experimental Variation	*Percentage of Those Making a Choice**		*No Choice*	*Percentage Asking to be Eliminated Themselves*
	This Job	*Other Job*		
HNM	59%	41%	04%	09%
HM	67%	33%	05%	14%
LNM	32%	68%	12%	20%
LM	44%	56%	07%	14%
CNM	41%	59%	11%	11%

* Highs *versus* Lows: $P < .05$.

that the Lows reply more often than the Highs that their job is the lower one, this difference being significant at the 1% level. Although the Controls resemble the Lows in this respect, there are qualitative differences between the two sets of replies. Whereas the Lows describe their job as "low" and one where they have to take orders, they tend to defend its importance and rarely say that it is too easy. The Controls simply see their job as relatively unimportant, dull, and too simple. This seems to indicate that, whereas the valence of the "task" is negative for the Controls, it is primarily the "position" that is negative for the Lows.

The final data relevant to the efficiency of the experimental instructions is found in the content of the messages. The primary meaning of high-status *versus* low-status in this experiment is that of high positive valence of the position as compared with low positive, or even negative, valence. To the extent that the instructions had the desired effect, we would expect the Highs to express more satisfaction with their job and the Lows to make more critical comments about theirs. In *Table 3* are presented the data bearing out this expectation. The Highs make more positive comments than the Lows but not significantly more. The Lows make more negative comments than the Highs, and this difference is significant at beyond the 1% level. The

TABLE 2

Responses to Questions at End of Experiment Indicating Awareness of Status Difference Between Own Job and Other Job

Experimental Variation	*"Our job is lower"**	*"The two are equal"*	*Not Codable in Terms of Status*
HNM	30%	52%	17%
HM	41%	41%	18%
LNM	64%	32%	04%
LM	62%	31%	07%
CNM	68%	26%	05%

* Highs *versus* Lows: $P < .01$.

TABLE 3

Expressions of Attitude Toward Own Job in the Messages

Experimental Variation	*At Least One Positive Comment*	*At Least One Negative Comment**	*Average Number of Messages containing Negative References***
HNM	35%	39%	·43
HM	27%	23%	·27
LNM	12%	60%	1·24
LM	24%	66%	1·00
CNM	21%	53%	·79

* Highs *versus* Lows: $P < ·01$. ** Highs *versus* Lows: $P < ·01$.

Controls seem to be intermediate between the Highs and the Lows with respect both to positive and negative comments.

Although the effects demonstrated here are certainly not as strong as we would like, these data consistently indicate that the experimental instructions created differences in the desired direction between the Highs and Lows with respect to perceptions of the job and satisfaction with it. For the low-status group, the possibility of upward mobility seems to have reduced the unattractiveness of the position, the *LM's* appearing to be somewhat less dissatisfied with their job than the *LNM's*. Although the comparisons are less consistent, there is some indication that the possibility of downward mobility reduced the attractiveness of the high-status position. To some extent, then, we can rank the four variations in terms of overall valence from *HNM* with the highest positive valence, through *HM* and *LM*, to *LNM* with the highest negative valence. We shall find this order to be helpful in interpreting our data in a number of instances. The *CNM* variation fits into the lower end of this order, but, as we have already pointed out, appears to differ qualitatively from the Lows.

The communication of irrelevant content

Over half of the messages addressed to the other sub-groups and about three-fourths of those sent to the same sub-groups were coded as having some content irrelevant to the group task. The frequency of sending irrelevant material (both to one's own and to the other sub-group) varies inversely with the overall valence order of the four variations. The *LNM's* send the most messages with irrelevant content, the *LM's* next most, and the *HNM's* the fewest. None of the differences between variations are significant for the total samples.

We might assume that the trends in our total data are weak because of the low intensity of effects produced by our experimental instructions. On this assumption we have attempted to intensify the experimental effects by selecting, on the basis of perceived status, those subjects upon whom the experimental instructions had maximal effect. Eliminating Highs who report

that their job is " lower ", including only Lows who describe theirs as " lower " (cf. *Table 2*), and eliminating four additional cases who indicated in the interview a special awareness of our attempt to give them a " set " by the experimental instructions, we are left with 15 *HNM's*, 13 *HM's*, 15 *LNM's*, and 18 *LM's*. Because we have a total of only 19 controls, we have not attempted to select among them.

The data on transmission of irrelevant content for these selected samples are presented in *Table 4*. The result of the selection is merely to emphasize the existing trends. The Lows send more irrelevant messages than the Highs, and mobility seems to interact with status (although not significantly) to produce an order that consistently agrees with the overall valence of the position.

TABLE 4

Average Number of Messages Having Irrelevant Content *

Experimental Variation	*Direction of Communication*		*Total***
	Other Sub-group	*Same Sub-group*	
HNM	3·33	2·67	6·00
HM	3·69	2·85	6·54
LNM	5·40	3·93	9·33
LM	4·11	3·05	7·16
CNM	4·05	3·74	7·79

* For experimental groups selected on the basis of perception of status.

** Analysis of variance for Highs and Lows:

	Degrees of Freedom	*Variance*
Status	1	56·47
Mobility	1	8·38
Status × Mobility	1	28·57
Error...	57	13·06

F = Status/Error = 4·32, $P < .05$.
$F = S \times M$/Error = 2·19, $P < .20$.

A reasonable explanation of this inverse relation, between perceived desirability of position and amount of task-irrelevant communication, assumes that irrelevancy provides an escape from the task. The less positively valent a position, the greater the desire to leave it and, consequently, the greater the volume of irrelevant content.

One type of task-irrelevant content—conjectures about the nature of the job in the other sub-group—was examined for the light it could throw upon the substitute locomotion hypothesis suggested by prior studies. This type of communication, which includes queries, surmises, and imaginations about the other job, should provide a substitute for desired locomotion into the other group, if, indeed, any communication can serve such a function. Accordingly, it would occur most frequently for those having low status and little possibility for upward locomotion. There is some support for this hypothesis. Here again, although the trend for the total data is not statistically significant, intensification of the experimental effects, by selection on

the basis of perceived status, serves to emphasize that trend and to support the hypothesis. Sixty-seven per cent of the *selected* Lows communicate at least one conjecture about the other job as compared with 46% of the *selected* Highs, this difference being significant at the 11% level. In terms of average number of conjectures, the *selected* Lows send 1·06 while the *selected* Highs send ·68, this difference being significant at the 5% level. Although we would expect a difference between the mobile and non-mobile Lows, there is none. It seems likely that the possibility of locomotion was fairly remote in both variations.

Further support for our general hypothesis concerning the occurrence of conjectures about the other job is obtained by dichotomizing our samples on the basis of choosing the same job *versus* the other job at the end of the experimental sessions (cf. *Table 1*). Assuming that this breakdown distinguishes between those persons who are highly desirous of locomoting into the other position and those who care little, we would expect to find more communication as a substitute for locomotion among the former persons. This proves to be the case as shown in *Table 5*. For the Lows and *CNM's*, those who choose the other job communicate conjectures about it much more often than do those who are willing to remain in their present positions. The same trends appear for the high-status variations but are much weaker. This is to be expected since, in the case of the Highs, choice of the other job probably reflects only weak forces to locomote. These findings generally seem to warrant the conclusion that communications in the form of substitutes for actual locomotion tend to be initiated by persons who are in low and undesirable positions and who have strong desires to locomote upward.

TABLE 5

Conjectures About Other Job Analyzed According to Job Chosen for "Second" Task

Experimental Variation	*Choice of Job for "Second" Task*	*N*	*Percentage Making One or More Conjectures*	*Average Number of Conjectures*
HNM	This	13	54%	·77
	Other	9	56%	·89
HM	This	14	71%	·93
	Other	7	57%	1·14
LNM	This	7	43%	·43**
	Other	15	73%	1·07
LM	This	12	25%	·50*
	Other	15	80%	1·47
CNM	This	7	57%	·57**
	Other	10	70%	1·50

* "This" *versus* "Other": $P < .02$. ** "This" *versus* "Other": $P < .10$.

In the present investigation, this type of communication occurs when the possibilities for real locomotion are absent or slight. Whether or not it would appear in excess among the Lows if the possibility of moving upward were kept real and vivid, the present data do not tell us.

The communication of criticism and confusion about one's own job

(a) *Criticism of own job:* We have already seen that the Lows tend to communicate negative attitudes about their own job more frequently than do the Highs. We find a further effect of status when we analyze the direction in which this content is communicated. In *Table 6*, whereas there is no difference between the status groups in the percentage communicating negative comments about their own job to their own level, significantly

TABLE 6

Percentage Expressing Negative Attitude About Own Job

Experimental Variation	*Direction of Communication*	
	*Other Sub-group**	*Same Sub-group***
HNM	17%	22%
HM	09%	14%
LNM	44%	32%
LM	55%	21%
CNM	37%	26%

* Highs *versus* Lows: $P < \cdot 01$. ** Highs *versus* Lows: $\cdot 50 > P > \cdot 30$.

fewer of the Highs than of the Lows send such messages to the other level. Although there are alternative explanations, this suggests that there are restraining forces acting on the Highs against expressing criticism of their own job to persons at lower levels. Thus, for those Highs who are enough dissatisfied with their job to communicate it, the tendency would be to transmit it to persons at their own level. For a similar group of Lows the tendency would be, if anything, to transmit it to the upper level. This phenomenon may be part of a general tendency on the part of the Highs to restrict to their own sub-group any communication content which would tend to reduce the valence of the high position for the low group. It is interesting to speculate that any such reduction for the low group might also decrease the attractiveness of their position for the Highs. This implies that the status of one's own position depends not only upon how he and his peers evaluate it but also upon the evaluation of people at other levels.

(b) *Confusion on the job:* In coding the messages it was found that each person's messages seemed to reflect his general ability to keep up with the influx of work directions. Accordingly each subject was categorized as having "much confusion", "normal confusion", or "no confusion", on the basis of the degree of bewilderment he expressed. This categorization proves to have virtually no correlation with the objective performance

measure, number of errors made in placing the bricks. As shown in *Table 7*, the Lows express more confusion about their job than the Highs, this difference being significant at approximately the 8% level of confidence. Although the Lows also tended to make more errors, the difference does not approach significance. In order to demonstrate that the difference in expression of confusion is not due to the slightly superior work of the Highs, *Table 7* also contains the frequencies of subjects in the three confusion categories for each error score. It can be seen that, with one exception (error score = 1), the Lows express more confusion while doing the same quality

TABLE 7

Expression of Confusion About the Work, Analyzed According to Objective Quality of Performance

Experimental Variation	*Confusion Category*	*Error Score* 0	1	2	3	4+	*Total Frequency in Each Confusion Category**	*Percentage in Each Confusion Category*
Highs	None	8	2	5	4	2	21	47%
	Normal	2	5	7	2	2	18	40
	Much	0	2	0	1	3	6	13
							45	100%
Lows	None	4	4	0	4	2	14	26%
	Normal	2	7	5	4	7	25	46
	Much	2	1	4	3	5	15	28
							54	100%

* Highs *versus* Lows: *P* equals approx. ·08.

of work. It may be noted that the Controls fall between the Highs and Lows with respect both to errors and expressed confusion. This phenomenon is rather difficult to interpret. The alternatives seem to be: (i) the Lows tend to express more confusion simply as a means of showing their distaste for the job, or (ii) the Highs restrain themselves from making public the fact of their difficulties with the task, which fact might show them to be incapable of handling the responsibilities of the high-status position. The nature of the confused messages which enter into this categorization makes the first alternative rather difficult to accept. The slight tendency for the *HM's* to express less confusion than the *HNM's* lends support to the second explanation. We would expect the former group, in order to prevent their demotion, to be more likely to prevent circulation of the fact of their confusion on the task. Although the meaning of these data is certainly open to doubt, we find it most reasonable to conclude that they indicate another instance of restraining forces operating upon the communication processes of high-status persons.

The communication of criticism of other persons

Considerable numbers of messages were implicitly or explicitly critical of the persons to whom they were addressed. The average number of messages containing such criticism is presented in *Table 8* for each of the five experimental treatments. For all variations, considerably more criticism is

TABLE 8

Average Number of Messages Having Content Critical of the Addressee

Experimental Variation	*Direction of Communication*	
	Other Sub-group	*Same Sub-group*
HNM	1·56	·43
HM	1·91	·32
LNM	1·76	·56
LM	1·83	·41
CNM	2·37	·47

addressed to the other sub-group, presumably because all the work directions are received from them. The outstanding difference among the variations is that the *CNM's* communicate more criticism of persons in the other sub-groups than do subjects in any of the other variations. This result leads one to suspect that the mere introduction of a status difference between the sub-groups produces restraints against interlevel criticism.

This phenomenon is more strikingly shown in *Table 9* which summarizes only *explicit* criticisms of persons in the other sub-group. There it is clear that the Controls communicate more criticism about the other group than either the Highs or Lows, and this holds true for communication to one's own group as well as for communication to the other one. Thus it appears that the restraints introduced by a hierarchy not only operate against criticizing other-level people " to their face ", but also discourages being critical of them in communications to one's own level.

TABLE 9

Communication of Explicit Criticism of Persons at Other Level

Experimental Variation	*Percentage Communicating at Least One Critical Message*	*Average Number*	
		Other Sub-group	*Same Sub-group*
HNM	39%	·52	·13
HM	59%	·64	·36
LNM	68%	·52	·52
LM	48%	·41	·28
CNM	78%*	·79**	·84***

* CNM *versus* Others : $P < ·05$. ** CNM *versus* Others : $P =$ approx. ·07.
*** CNM *versus* Others : $P < ·01$.

A comparison of the last two columns in *Table 9* shows that the last statement does not hold equally for the Lows and Highs. A much larger proportion of the Lows' criticism of persons at the other level is directed to their own level. Of the 22 Highs who communicated any criticism of persons in the other sub-group, none sent this criticism exclusively to their own room. Of 31 Lows who criticized persons at the other level, 9 addressed this criticism exclusively to their own sub-groups. This difference is significant at the 1% level of confidence. The *CNM's* resemble the Lows in this respect, i.e., they also tend, relatively speaking, to restrict criticism of the other level to their own room. Although in *Table 9* the *HNM's* appear to communicate less total volume of criticism of the other room than do the *HM's* (perhaps the *HNM's* have less motivation to criticize the Lows), the data we have just cited indicate quite clearly that *both* high variations transmit directly to the targets of the criticism a larger proportion of whatever criticism they do feel toward the other sub-group. This result suggests that the Highs feel greater freedom openly to criticize members of the other stratum than do the Lows or Controls. It is quite possible that a high-status position extends the power that occupants feel themselves to possess over certain areas of interpersonal relations within the group, overt and direct personal criticism being one of these areas.

The effects of status and mobility on cohesiveness of the total group

We have both sociometric choices and communication data which reflect the effects of our experimental variables upon interpersonal attractions among the members of the two sub-groups. In *Table 10* are presented the data from the question asked at the end of the session, "Which person in the total group did you like best during the experiment?" The resulting choices are tabulated in terms of whether they consisted of a person in the same sub-group or in the other one. *Table 10* also presents the frequencies that would have occurred if the choices had been made at random. The tendency in the absence of status differentiation (i.e., for the *CNM's*) is to overchoose persons in the other room. This is to be expected since most of the friendly and helpful messages in the standard set happened to be designated as coming from one person in the other sub-group. The *HNM's* also overchoose in this direction. By comparison (although not actually), the *HM's* underchoose members of the other sub-group and there is some tendency for the *LNM's* to do likewise. Thus, there seems to be a slight tendency for the *HM's* and *LNM's* to disregard or shun the other level.

In *Table 11* are presented the selections of persons to eliminate from the group, these having been made at the end of the experiment on the pretext of preparing to do a second task. Here the *HM's* and *LNM's*, as compared with the *CNM's* and *HNM's*, tend more often to reject persons at the other level by selecting them for elimination from the group.

These findings are supported by several kinds of communication data. In terms of total undifferentiated volume of communication, the *HM's* and

LNM's, as compared with the other variations, send a smaller percentage of their messages to the other sub-group. The messages they do send to the other level tend to be shorter while those of the other variations tend to be longer. Neither of these differences are significant but the fact that they independently follow the same pattern lends considerable support to the

TABLE 10

Choices of Who They Liked Best in the Total Experimental Group

Experimental Variation	*Direction of Choice*	*Obtained Frequency*	*Theoretical Frequency**	*Amount of Over-Choice in Other Sub-group* ($f_o - f_t$)
HNM	Other sub-group	20	12·9	7·1
	Own sub-group	3	10·1	
HM	Other sub-group	16	13·3	2·7
	Own sub-group	6	8·7	
LNM	Other sub-group	19	14·9	4·1
	Own sub-group	6	10·1	
LM	Other sub-group	22	17·0	5·0
	Own sub-group	7	12·0	
CNM	Other sub-group	17	11·6	5·4
	Own sub-group	2	7·4	

* These theoretical frequencies indicate the frequency of choice in a given sub-group that would be expected if the choices were made purely at random. Their computation takes into account the number of persons in the two sub-groups at each experimental session. No similar correction has been necessary for our communication data because, within the range of variation, the number of persons present made no difference in the pattern of communication.

emerging conclusion that the *HM's* and *LNM's* tend to reject persons at the other level.

More conclusive evidence appears in an analysis of specific types of communication content. We have already summarized in *Table 9* the percentage of each experimental sample that expressed explicit criticism of persons at the other level. The *HM's* and *LNM's* are higher than the other hierarchical variations (the difference being significant at the 6% level) though lower than the controls. The final relevant data are presented in *Table 12*. Here are summarized communications which would be promotive of better interpersonal relations within the total group. This content, which we have termed " cohesiveness-building ", includes overtures to friendship, encouragement and praise, and friendly, personal content. The *HM's* and *LNM's* clearly send less of this type of content to the other level, the difference between them and the other three variations being significant at the 1% level.

We find quite consistently, then, that the high-mobile and low-non-mobile variations are the ones most destructive of inter-level cohesiveness. We probably need to appeal to different explanations of this effect for the

TABLE 11

Choices of Persons to Replace in Experiment*

Experimental Variation	*Distribution of Subjects' Two Choices*	*Obtained Frequency*	*Theoretical Frequency***	*Amount of Over-choice in Category* $(f_o - f_t)$
HNM	Other sub-group only	6	5·5	0·5
	Both sub-groups	10	11·6	— 1·6
	Own sub-group only	4	2·9	1·1
HM	Other sub-group only	9	7·1	1·9
	Both sub-groups	11	12·4	— 1·4
	Own sub-group only	2	2·5	— 0·5
LNM	Other sub-group only	10	6·4	3·6
	Both sub-groups	10	11·3	— 1·3
	Own sub-group only	0	2·3	— 2·3
LM	Other sub-group only	8	7·6	0·4
	Both sub-groups	15	14·3	0·7
	Own sub-group only	2	3·1	— 1·1
CNM	Other sub-group only	5	5·6	— 0·6
	Both sub-groups	9	9·4	0·4
	Own sub-group only	3	2·0	1·0

* This table includes only subjects giving the two choices requested in the instructions.
** See footnote, *Table* 10.

two different variations. It seems likely that the high-mobiles become hostile toward the Lows because the Lows represent a threat to their occupancy of the high-status position (they would presumably be replaced by a person from the Low group). The low-non-mobiles can be expected to be hostile toward persons who occupy the position which they themselves desire but cannot enter. The low-mobiles seemed to be intermediate in amount of hostility toward the other level, presumably being less hostile than the *LNM's* because of the future possibility that they will share the high position with

TABLE 12

Average Number of Messages Having Cohesiveness-Building Content

Experimental Variation	*Direction of Communication*	
	Other Sub-group	*Same Sub-group*
HNM	1·43	·78
HM	·82	·45
LNM	·72	·64
LM	1·31	·45
CNM	1·63	·63

those presently located there. The *CNM's* would have little instigation to interpersonal hostility on the basis of status-related threats or jealousies. They would overchoose persons from the other sub-group simply because of the kind of messages received from there. In the case of the *HNM's*, they can afford to like a lower-status person since he is in no way a threat to their high position.

In summary, the status variations which are most disruptive of the cohesiveness of the total group are high status combined with the possibility of demotion (*HM*) and low status combined with the impossibility of promotion (*LNM*). High status with security of position (*HNM*) and low status with the possibility of upward locomotion (*LM*) both operate to develop inter-level friendliness to approximately the same degree as does the non-hierarchic situation (*CNM*).

These findings may explain some of the results from Thibaut's experiment (6). Within his high- and low-status teams, he distinguished between members who were most central (most chosen by the total group) and those who were most peripheral (least chosen). We might assume that centrality yields a feeling of stability or fixity in the present status position and that, in contrast, peripherality makes the present status position seem more tentative. From our conclusions above, then, we would expect Thibaut's central Lows and peripheral Highs to develop the greatest rejection of the group at the other level, just as our stable Lows and unstable Highs did. Indeed, this proves to be the case. The effect is marked for his variation where the Lows were not allowed to locomote into the high-status position. This would appear to warrant broadening our conclusion to the more general statement that high, unstable status and low, stable status are the conditions most detrimental to the total groups' cohesiveness.

SUMMARY OF FINDINGS

The following conclusions are indicated by the experimental data:

1. The more unpleasant is a position in a hierarchy, the stronger are the forces on a person to communicate task-irrelevant content, this holding true whether the communication is directed to one's own level or to the other level. Irrelevant content is postulated to serve the function of permitting the occupant of an undesirable position to escape from it. Low-non-mobile status is clearly more unpleasant than high-non-mobile status. The combination of low status with upward mobility seems to increase the valence (or decrease the unattractiveness) of the low position while the addition of downward mobility to high status decreases the valence of the high position.

2. Communication serves as a substitute for real upward locomotion in the case of low-status persons who have little or no possibility of real locomotion. This was found to hold true only for low-status persons who exhibited some desire to move upward.

3. Restraining forces act upon high-status persons against addressing criticisms of their own job to the lower sub-group and against expressing

confusion with their task. We have postulated a general tendency to restrict the transmission of content which would tend to lower the status of one's position in the eyes of others or which would make oneself appear incompetent in the high-status position.

4. The existence of a hierarchy produces restraining forces against communicating criticisms of persons at the other level. High status seems to give persons greater freedom to express whatever criticisms they have of the other level directly to the criticized persons rather than to one's own level.

5. The low-non-mobile and high-mobile conditions are definitely more detrimental to the total groups' cohesiveness than are the other status-mobility combinations investigated here. We have explained this in terms of hostility that results from perceiving persons at the other level either as threats to one's own desirable position or as occupants of a coveted but unattainable position.

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BIOGRAPHICAL NOTE

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INDUCTION OF FORCES IN DISCUSSION GROUPS[1]

MILTON W. HOROWITZ, JOSEPH LYONS, AND
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THEORETICAL FORMULATION

Introduction. The problems in the explanation of interpersonal relations do not exist totally at the level of fact-finding. Contemporary psychology is not guilty of too much speculation and too little hard-headedness. This is in many respects unfortunate, for facts without theories are as blind as theories without facts. The facts are seemingly tremendous in scope. While this study is concerned with the interpersonal relations in a face-to-face discussion group, it is apparent that the problems of interpersonal relations have had tentative common sense solutions in many other areas of human activity.

The practitioners, for example, have much pragmatic insight into the nature of interpersonal relations. Modern advertising, for instance, employs " men of distinction " who by their approval of some beverage, hope to induce forces in the public toward consuming that beverage also. Everywhere, politicians decry their opponent by attacking the person's reputation and so by implication, and not very logically, the opponent's policies. Because (to be extreme) Mr. X has kicked a dog, it is unlikely that his program for starting a new community center is worthwhile. Juries react to the defendant, the prosecutor, the defense counsel, the other jurors, to reach decisions that may make a difference in terms of life or death. The effective lawyer is well aware of numerous devices for influencing the jury's perception of a defendant or a witness.

[1] This project was part of the program of the third summer session of the National Training Laboratory in Group Development held at Gould Academy in Bethel, Maine. The National Training Laboratory is a training and research enterprise in exploring the processes and skills of effective group action. It is sponsored jointly by the National Education Association and the Research Center for Group Dynamics of the University of Michigan. University co-sponsors of the third summer session also include the University of Chicago, University of Illinois, Ohio State University and the University of Kansas. Additional co-operating institutions were the Allan Memorial Institute of Psychiatry, the Center for Human Relations Studies of New York University, Haverford College, the Institute for Research in Psychotherapy, Inc., Seattle Public Schools, Springfield College, and the Tavistock Institute of Human Relations, London. The operation of the summer laboratory was aided by a grant from Carnegie Corporation of New York.

The principles of interpersonal relations operate, axiomatically, wherever people react to others. Discussion groups and administrative committees, as well as juries, function every day. But the conditions under which, for example, one person agrees with another are not *systematically* investigated. There are, to be sure, some general rules-of-thumb that are adequate. A " good " president may say, " Bill suggested *this* ; now, what he really meant was ....., and I am for it." A systematic explanation of this event is necessary. In the field of fact-finding in psychology, the so-called attitude studies are ubiquitous. A particular person's reaction to others is measured. Person *p* dislikes the Jews because they are " grasping and mercenary ". There are, the prejudiced person says, some good Jews, but these are exceptions. Attitude studies, however, are not explicit experiments on interpersonal relations, because no conceptual system to handle two people has been adequately formulated. The attempts to control the variables in our perception of objects is seen in numerous studies on social perception. " Value " and " need " influence perception of coins, for example. While the projection of these principles to people's perceptions of *people* may be in the future, this approach is still indirect. Moreover, the level of conceptualization is still crude.[2]

A recent advance in thinking has occurred in this area of social perception. Heider (1, 2) has offered a systematic framework, although still at a relatively descriptive level, for depicting the relations between one person and another. He has included in his system some dynamic factors which make for derivation of observable phenomena, and hence, experimentation under controlled conditions. It will be useful here to summarize some of Heider's formulations, since these formulations were used in the present experiment in discussion groups.

Heider points out that generally persons are considered *sources* of acts, and *connected with* acts. People help ladies across the street, people tell you that they like you, people kill defenseless children. In our perceptual field, a person is seen as the origin or emitter of the act. For instance, if person *o* helps an old lady across the street, we may phenomenally distinguish between person *o* and his action of " helping an old lady across the street " ; but person *o* will be connected with, and is held responsible for, that act. This is a seemingly obvious observation, but it has some important exceptions that will be derived later. This relation of the *person* to the *things he does* is of primary importance. It will be important to know, for instance, the valence of the person and the valence of his act.

Heider has introduced a symbolic language which handles many dimensions of interpersonal relationships. The content of a person *o*'s *act* is replaced by the symbol *x* in the derivations that are given below. For instance, in the example, let us say that person *p* is observing person *o*. Person *o*, as above, is seen killing a defenseless child (*x*). If *p* likes *o* and considers " killing a

[2] Apparently, there is even some reason to question the empirical findings. See, for example, Pastore, Nicholas, " Need as a Determinant of Perception ", *J. of Psychol.*, 1949, *28*, 457–475.

defenseless child" bad, we could write the following statement (all in *p*'s life-space or cognitive field):

$$+o \text{ is connected with } -x$$

Heider postulates that this situation, wherein a *positive* person ($+o$) does something *negative* ($-x$), is a condition of disharmony or disequilibrium. If *p* dislikes *o*, then in *p*'s life-space *o* is negative. If $-o$ is connected with $-x$, we get a condition of harmony or equilibrium. But suppose, as above, person *o*, now a "good" person, as seen by *p*, kills a defenseless child (x). The basic assumption here is that, if to a system in equilibrium a stress be brought, the system will move in a direction that will tend to counteract the stress.[3] This means that the psychological system will always have forces attempting to maintain equilibrium and stability now, or to achieve it in the future. Starting then with the above disequilibrium, three resolutions to a condition of balance are possible.

Symbolically expressed:

$+o \quad -x$ is the initial condition of disequilibrium.

Resolution 1. $\boxed{+o \qquad +x}$

Here the act is seen as positive. While it is apparently bad, it is really "good". For example, even in this extreme case of person *o* killing a defenseless child, a resolution is possible in this manner: the child who might have been suffering from an incurable affliction is "saved" from further pain.

Resolution 2. $\boxed{-o \qquad -x}$

This resolution occurs when the person is now seen as negative, in connection with his negative act. Bad people do bad acts. The person is re-evaluated. He must be bad if he does something despicable, viz., killing a defenseless child.

Resolution 3. $\boxed{+o} \quad \boxed{-x}$

A third resolution occurs when the act is perceived as not belonging to the person. This may be done by saying that person *o* was coerced by fate, by others, by accident, by chance, by mistake, etc. Psychologically, the act of the person has been separated from the person, and hence the disharmony of the *plus* person with the negative act is avoided.

A fourth result, which is considerably less common is that it is possible for the initial conditions to remain; that is, the disharmony relationship continues for the person.

It is clear that if person *o* is seen as plus by *p* (the perceiver), that is, if person *p* likes person *o*[4], he will tend to see *o*'s *act* as *plus* (Resolution 1) or he will

[3] This is, of course, a psychological equivalent of the law of Le Chatelier.

[4] Symbolically, this may be represented by: *p* th $+o$ (*p* thinks plus *o*); *p* L *o* (*p* likes *o*); or *o* is positive to *p*.

change the *valence* of the person (Resolution 2), or he will separate the act from *o* (Resolution 3), unless the act is very negative. Since it is possible to predict from a condition of disharmony wherein all people who strongly like person *o* will attempt to achieve equilibrium by seeing *o*'s acts as positive, experimentation becomes possible.[5]

The context for the present experiment was a discussion group. It furnished an opportunity to examine how groups function, as well as the interpersonal dynamics, involved in such processes as a group decision. The pattern of interpersonal relations within a group is very complex, to be sure. Various members are linked with others by different kinds of perceptions. It is interesting, for example, to know the pattern of likes in a group. Sociometrists have done extensive work in this area. It is also useful to know the pattern of agreements in a group. What members of a group, for example, agree with what other members? By asking this question, we can formulate one kind of problem important in group research.

Units of Social Perception. The basic units in this investigation are the *pox* unit, *poqx* unit, and *pogx* unit.

The pox unit. By *p* is meant the person who perceives another person *o*. Suppose, for instance, in a group discussion, *o* contributes something to the group process. Then *o*, in our language, commits act *x*. This may simply be suggesting that the group leave for a coke. It may be suggesting that the group set an agenda for the next day instead of pushing along in their present program. The *pox* unit considers how person *p* sees person *o* committing act *x*. The act is in equilibrium if person *p* dislikes *o* (*p* th: $-o$), and the act is seen as negative; the act is in equilibrium if *o* is liked by *p* (*p* th: $+o$), and if what *o* does is plus, or good. The other possibility is a unit where disequilibrium occurs.

The poqx unit. What other members would see what *o* does as good or bad? The *poqx* unit considers what person *p* thinks *others* would say about *o*'s act *x*. Does *p* tend to say that the other people in the group would agree with *o*'s act? A stable or harmonious *poqx* unit would occur if *p* sees *q* (a person he likes) as liking *o*'s act, where it is known that *p* th: $+o$. Here it is important to make the distinction between persons as *sources* of acts, and persons as *connected with* acts both of which Heider subsumes under the symbolic notation oUx, that is, *o* is a unit with act *x*. An example from the group may point up the conditions under which this distinction occurs. Suppose person *o* says something in the group discussion, and persons q_1, q_2, q_3, nod their heads in approval. Here we may say that person *o* is the source, or origin, of the suggestion, but q_1, q_2, q_3, by their overt agreement are seen by the perceiver *p* as *psychologically connected with* the act, *by approving it.*

Let us suppose *p* th: $-o$. Now *o* makes a suggestion about which *p* is ambivalent. When *p* perceives q_1, q_2, q_3 (people he *likes*, let us say) agreeing,

[5] It is possible to control those cases in which *p* separates *o* from *x*; there is also some evidence that most usually the valence of the act (*x*) is a function of the valence of the person (*o*) unless *x* is unusual and flagrant, in which case the reverse occurs.

there is a force for p th: $+x$. Even though disharmony may exist between o and his act (o is $-$; his act, $+$), there can be more harmony if x is seen as good, and plus persons q_1, q_2, q_3 as connected with it (three harmonious units). The *poqx* unit is probably fundamental in understanding a particular agreement or disagreement.

The pogx unit. In this unit g represents the *group* and x is an act that is connected with o as source. We have treated this unit similarly to the *poqx* unit. The only difference derives from the assumption that p perceives g as a phenomenal whole and reacts to it as such.

THE DESIGN OF THE EXPERIMENT

The design of the research followed, in general, the theoretical formulation given above. It was necessary to collect the perceptions of individual members of the group that might be related to induction during the group process. Determination of the valence of the members of the group as well as determination of the valence of the acts or events connected with particular persons was required. These furnished the raw data for discerning the harmonious, or disharmonious, *pox*, *poqx*, and *pogx* units. It should be noted here that although this experiment has been described as "group research", actually this is a misnomer. We are really dealing with a group only as it affects the responses of individuals in a group situation. All data obtained are individual data. By this is meant not only that all questions were answered by individuals, but that it is assumed that all data exist in the individual's (p's) life-space (i.e., in each individual's perception).

The acts, or events, were secured by an observer as they occurred in the normal activity of the group. These were checked for content, relevance, and importance with a second observer before they were accepted or rejected for use. The following criteria were employed[6]:

1. It was agreed that the events should be public and should be cognitively clear. This criterion limited the acceptable events to verbal exchanges that had assumed some importance in the group discussion. It was impossible, of course, to *assure* cognitive clarity for all members of the group. We did, however, apparently succeed in doing this. What appeared to the observers as clear was also clear to the group members.
2. Events should be attached to a single person in the group as originator. Although all events were the product of discussion engaged in by many group members, it was comparatively easy to single out events that were attached to a single person as the source.
3. Events should be molar units and goal directed. It was not necessary that the event be seen as a locomotion toward a gaol, but that it be

[6] Unit formation, of course, follows the standard laws of perception. Some of the criteria here were selected with this in mind.

related to goals already defined in the life-space of the group members either in indicating new regions, barriers, or paths (increasing cognitive structure) or in indicating new means or sources of assistance (creating or augmenting motivation), etc.

4. The events should be somewhat controversial: an injection of a new or different point of view. This criterion was to insure the possibility that different group members would show differences in the valence accorded the event and also that the event might lead some group members to change the valence of the person who had originated it. That is, controversial events are those which are *plus* to some group members and *minus* to others. It was hoped that this might lead some group members to change the valence of the person seen as the source of the event, if their attitude toward the event was strong.
5. An attempt was made to utilize events that were associated with persons in the group who were either of predominantly high or low valence to most other members of the group. This was to insure that events would not be associated with neutral persons and hence be regarded as unimportant. This criterion was approximated, but it was never possible to fulfill it completely.

The Procedure. The entire procedure, including the administration of the questionnaires, was accomplished in one three-hour session. Permission had previously been requested and granted by the group [7] to conduct the research on the prearranged morning. At 9 a.m. the group assembled and was briefed upon the time needed and the sequence of events.

The first fifteen minutes were spent in filling out the impression questionnaire (see below for a discussion of these instruments). The next 1½ hours the group spent as usual, discussing its own problems, as they arose and in accordance with its own desires. It was during this interval that three events were chosen and agreed upon by two of the three observers. At the end of this session the group took a ten-minute break and the events agreed upon by the observers were written on the blackboard. When the group returned from the break, the impression questionnaire was given once more, followed by the judgment questionnaire. All of the group finished this part of the task within the hour remaining. The observers remained in the room and answered all procedural questions. During the group discussion, the process observer [8] was taking down all interactions that occurred. The procedure here was to work for twenty minutes and rest for five minutes. This, of course, gave almost complete data on all exchanges that occurred in the group discussion.

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[7] Although research is part of the training laboratory situation and every effort is made to obtain a positive attitude toward research, it is also true that any research done must cut into any other aspect of training or interest of the group. To insure co-operation and valid results, it is necessary to receive permission from the group to take some of the group's time.

[8] We were capably assisted in this function by both Dr. G. E. Swanson and Mr. Jan Bout.

The Research Instruments. Two scales, or questionnaires, and a process record may be described here. The scales were designed to secure a determination of valence of each person in the group by every other person in the group, (p th: $+$ or $-o$) and a determination of agreement or disagreement with the events as they occurred in the group (p th: $+$ or $-x$). The process record was designed to secure the verbal interactions that occurred in the group discussion.

1. The valence scale, called the impression questionnaire, was intended to obtain a general, overall impression by each member of the group for all other members. It is certain that the responses on this scale were not unidimensional, since " like " is not a unitary thing. We like (or dislike) some people not only more or less than we like (or dislike) others, but also for different reasons. Nevertheless, it was not feasible to differentiate the valence relationships that existed. Rather, it was hoped that the responses on this scale would yield a genuine affective relationship (for whatever reason), and this relationship would be a dynamic attitude toward persons, that would result in tendencies to accept or reject acts that were seen as being in a unit with these persons.

The instructions for this scale were simply to rank each member of the group (including one's self) on the scale from most liked to least liked on the basis of a general, overall impression. The most liked person was placed at the top, the next best on the second line, and so on through the group, with the least liked person on the bottom.[9] Since it was believed that the culture of the group did not permit of a direct expression of dislike, it was assumed that the least liked persons on the bottom of the list represented a dislike and the most liked persons on the top represented a genuine like.

2. The second scale used (the judgment questionnaire) was an attempt to discover the resolutions of the tendencies predictable from the attitude. For example, if p th: $-o$, and o and x are perceived as a unit, then there is a tendency for p th: $-x$. Similarly, there is a tendency for p to believe that q (another member of the group) will also think $-x$ if p th: $+q$ or, that q th: $+x$, if p th: $-q$. The judgment questionnaire, reproduced below, attempted to explore a few of the ramifications of these resolutions.

JUDGMENT QUESTIONNAIRE

*Your Group Number*_____ *Your Number*_____

A number of major " events " that may or may not have occurred in your group during this session will be put on the blackboard. Each one will be given an identifying letter. In the questions below, please refer to each event by letter.

[9] Each group member was identified by a number.

Refer to the group members by number, and wherever it is relevant please include yourself.

In some cases it may be difficult for you to decide what the other members might have thought of the events. You may not be absolutely certain, but if you are reasonably *certain, put it down. If you are* unsure *of another member's reaction, leave him (or her) out.*

1. *Which particular persons do you* THINK *would have wanted to support:*

   *A.*_____ *B.*_____ *C.*_____

   Which particular persons do you think would NOT *have wanted to support:*

   *A.*_____ *B.*_____ *C.*_____

2. *Do you think that the* GROUP, *in general, would have wanted to support:* (*yes or no*).

   *A.*_____ *B.*_____ *C.*_____

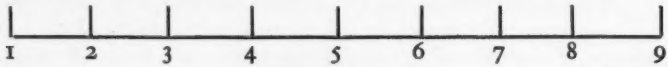
3. *Which particular persons do you think would have seen these events as a means to* GROUP *progress:*

   *A.*_____ *B.*_____ *C.*_____

   Which particular persons do you think would have seen these events as IMPEDING *group progress:*

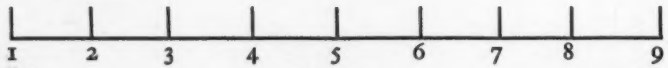
   *A.*_____ *B.*_____ *C.*_____

4. *On the following scale, place the letters A, B, and C at the appropriate points along the scale to show how* CLEAR *each of the events was to you:*



I was confused. Did not know what it was all about. — *Had* SOME *idea of what was going on, but some aspects are unclear.* — *Understood completely what was going on.*

5. *Rate on the following scale your general feelings about the events* WHEN THEY OCCURRED:



Terrible — *Neutral* — *Fine*

6. *You will notice that* ONE *person is associated with each of the three events. On the following scale, check each event in accordance with how* TYPICAL *(or representative) you think it would be of that person's regular T-group behavior:*

	Typical of his usual behavior	*Unlike his usual behavior*
A		
B		
C		

7. *On the following scale, make a check at the appropriate place where you feel this group falls, on the basis of your overall general impression of it :*

1	2	3	4	5	6	7	8	9
Dislike very much		*Dislike somewhat*		*Neutral*		*Like quite a lot*		*Like very much*

8. *On the following scale, make a check at the appropriate place for the overall, general impression that you think the group (on the average) has of you :*

1	2	3	4	5	6	7	8	9
Dislikes me very much		*Dislikes me somewhat*		*Neutral*		*Likes me quite a lot*		*Likes me very much*

It may be noted that the following types of information are secured by this questionnaire :

(i) Whom *p* sees in his group as supporting or not supporting these events.
(ii) Whom *p* sees in his group as believing that these events are a means or an impediment to group progress.
(iii) Whether *p* thinks the group supports these events.
(iv) *p*'s attitude toward the events and toward the group, and his idea of what he thinks the group thinks of him.
(v) Whether the events are clear to *p* and whether they are typical of *o*'s usual behavior.

3. The process record [10] was used to obtain all verbal interactions in the group. This was a categorized running account of all verbal interplay that occurred. The categories included the interactors, function of use of power (e.g., agrees, disagrees, ignores, seeks influence, etc.), the invoked source of

[10] The process record was a revision of earlier forms previously used by the Research Center for Group Dynamics of the University of Michigan. We are indebted to Dr. G. E. Swanson, Mr. Jan Bout, and Miss Jeanne Watson for its use.

power (whether self or others), the manner of use of power, and feeling tone. No category had a reliability under approximately 0·80 and most were considerably above this figure. Knowing the attitude of persons toward each other, it was felt that a relationship would exist between the attitude and actual agreement or disagreement as it occurred in the group.

RESULTS

The reliability of valence of a person. One methodological difficulty lies in the assumption that the valence relationships in the group are constant. This assumes that the valence that exists at the time an agreement is seen in the group process is the same as that which exists at the end of the meeting. The hypothesis states that the valence of a person can determine the valence of an act ; it is also true, however, that the valence of an act can change the valence of the person at a particular time. If this occurs with considerable frequency, the assumption of valence constancy is unwarranted. It was necessary, therefore, to make two separate determinations of valence ; one at the beginning of the group discussion and one at the end. The reliability coefficient for these two determinations is 0·94. Despite the fact that there were several large changes of valence and many smaller changes, the coefficient indicates the great stability that valence relationships do have even over a group session that exhibits considerable stress and frustration and elicits emotional behavior.

It should be remembered that these determinations were made in the second week of the group's three weeks of daily activity. Unquestionably, the valence relationships were moving toward stability, even though major shifts can and do occur at any time in the life of the group. The assumption of valence constancy (which is used here in connection with the process record only) is not a completely tenable one, but the magnitude of the correlation indicates that it does not seriously invalidate the results obtained.

The basic unit—*pox*. The theory of interpersonal relations states that persons are seen as causal units in relation to their acts and that the valence of the person determines, to a large extent, the valence of the act. Part of the data secured in the group may be used to test this assertion. It will be recalled that three events which occurred during the group discussion were placed on the board ; that these three events (or acts) were associated with the three persons who had made them ; and that these three persons were already assigned a position in the valence hierarchy of the group by each person in the group. It remained only to determine whether acceptance of the acts was in accord with the valence of the person seen as the source of the act.

It is clear, however, that if *p* has no strong feelings about *o*, he will also quite probably have no strong feelings about *x*. This fact necessitated the deletion of all cases in which *o* does not bear a " strong " relationship to *p*, namely, those cases in which *p* ranked *o* somewhere in the middle of his valence rankings for the entire group. It was arbitrarily decided to use only those cases in which *o* was in the top 4 (*p* th: $+o$) or bottom 4 (*p* th: $-o$)

valences. The assumption made here is that these 8 cases (out of 20 possible) represent those that make a difference to *p* and that the top 4 represent positive persons and the bottom 4 represent negative persons. It should be noted that to the extent that this assumption is not met, the results obtained will be less significant statistically than they might otherwise be.

Two other corrections were made in the data. One of these was a correction for clarity. It is obvious that if the act of *o* is not clear to *p*, or if some cognitive confusion exists in *p*'s life-space with respect to the causal unit, no tendency toward *x* may be predicted. Accordingly, all events that did not receive a rating from *p* of 7 or higher (on a 9-point scale of clarity) were arbitrarily omitted from the computations. The other correction is for typicality or representativeness. If *p* likes *o* (*p* th: $+o$) and *o* commits a bad act (*p* th: $-x$) one resolution of this unstable unit is to separate the person from the act. Thus *p* may say : *o* is not to blame ; it is not his fault ; or, *p* may say, he did not want to do it, but was forced (by external or fortuitous circumstances) to do it ; or *p* may say : *o* really does not act like this usually—it is not typical of his behavior. The same resolutions can also occur, of course, if *p* th: $-o$ and *p* th: $+x$. It was believed that the correction for typicality would eliminate all those cases in which *p* had separated *o* from his act and that only those cases in which unit formation had persisted would be taken.

The assumptions made, and the corrections taken, reduced the size of the liked group to 5 cases and the disliked group to 16 cases. The statistical procedure involved a determination of differences between the ratings assigned to those acts associated with liked and disliked *o*'s. The mean difference between the two groups was 3·94. The t-score was 2·56 which yielded a probability of chance occurrence at approximately the 2% level of significance. In view of the small number of cases in the two groups, such a level of significance is noteworthy. There can be no question but that the hypothesis of the stable unit is tenable. Agreement or disagreement with *o*'s acts is directly related (in *p*'s life space) to *o*'s valence. It should be made clear that we have investigated here only one resolution of the stable unit, and it represents really a confirmation of the phenomenon of closure or reduction to simple structure. Other resolutions also occur, and unquestionably, under some conditions, a more differentiated structure is possible whenever discrepancies between *o* and *x* are resolved. These comments also apply to conclusions drawn about the *poqx* and *pogx* units.

The *poqx* unit. It is important to test the theoretical formulation in another manner. It is predicted that *p*'s attitude toward *o* affects *p*'s attitude toward acts seen in a unit with *o*. It is also predicted that there will be a tendency for *p* to see all others in the group toward whom he has a positive attitude to " see things " the way *p* sees them. There will also be a tendency for *p* to see all in the group toward whom he has a negative attitude to see things " opposite " to *p*'s point of view. More simply, it is predicted that *p* will find allies and enemies in the group with regard to *p*'s judgments of *o*'s acts ; and these allies and enemies will be determined by *p*'s attitude toward

the others in the group. Once again, the valence relationships of all others in the group (q_1, q_2, q_3, . . . q_n) are known and p has determined what his attitude toward o's act is. It remained only to ascertain p's answers to the following questions and to relate them to p's attitude toward q.

(i) Which persons in the group would and which persons in the group would not have wanted to support these events?
(ii) Which persons in the group would and which persons in the group would not have seen these events as a means to group progress?

Only those persons (q) listed by p in the top and bottom 4 valences were utilized.[11] This was once again on the assumption that the top 4 are liked persons and the bottom 4 disliked persons. The procedure was simple. The data for all persons in the group were placed in a fourfold table indicating $+q$ and $-q$, and $-x$ and $+x$. The data are those for all three events. It should be noticed that only the data for question (i) above are given here. Since both question (i) and (ii) yielded completely comparable results and since they are not tapping independent attitudes (in p's life space), it is not necessary to include both here. These tables are given below.

Taking *Table I* as an example, they are to be read as follows:

Where p th: $+o$ and p th: $+x$, all other persons (q) in the group who were positive to p were seen by p as disagreeing with the act (p th: q th: $-x$; i.e., p thinks that q thinks the act is negative) three times, and agreeing with the act seven times (p th: q th: $+x$). All other persons (q) in the group who were negative to p were seen as disagreeing with the act five times and agreeing with the act three times.

Tables I–VI include the basic data. They represent categories of p's perceptions of what he thinks of o's act (x). The combinations chosen are:

p th: $+o$; p th: $+x$
p th: $-o$; p th: $-x$
p th: $+o$; p th: $-x$
p th: $-o$; p th: $+x$
p th: $\pm o$; p th: $+x$
p th: $\pm o$; p th: $-x$

The latter two cases (p th: $\pm o$) included all those in which o was accorded a valence of 5 to 16 (i.e., was not in the top or bottom 4). The assumption here is again that the middle valences constitute a "neutral zone" more likely to be characterized by weak, ambivalent feelings toward o. *Tables VII* and *VIII* are, respectively, combinations of *Tables I, IV, V,* and *II, III,* and *VI*: *Tables IX, X,* and *XI,* are, respectively, combinations of *Tables I* and *III, II* and *IV, V* and *VI.* In short, *Tables VII* and *VIII* include cases where p th: $+x$

[11] Exceptions to this occurred in all those cases where o was also in either the top or bottom 4 valences. In this case, either the top or bottom 5 was accepted for including q.

and p th: $-x$; *Tables IX, X,* and *XI* include cases where p th: $+o$, p th: $-o$, and p th: $\pm o$.

χ^2 has not been obtained for *Tables I* and *III* where the expected frequency

TABLES I–XI

The Relationships of q and x to p in the *poqx* Unit

Table I

p th: $+o$
p th: $+x$

	$-x$	$+x$	
$+q$	3	7	10
$-q$	5	3	8
	8	10	18

Table II

p th: $-o$
p th: $-x$

	$-x$	$+x$	
$+q$	25	2	27
$-q$	18	15	33
	43	17	60

$\chi^2 = 10{\cdot}6$
$p = > 0{\cdot}01$

Table III

p th: $+o$
p th: $-x$

	$-x$	$+x$	
$+q$	11	2	13
$-q$	7	3	10
	18	5	23

Table IV

p th: $-o$
p th: $+x$

	$-x$	$+x$	
$+q$	2	20	22
$-q$	14	10	24
	16	30	46

$\chi^2 = 12{\cdot}3$
$p = > 0{\cdot}01$

Table V

p th: $\pm o$
p th: $+x$

	$-x$	$+x$	
$+q$	1	21	22
$-q$	9	7	16
	10	28	38

$\chi^2 = 12{\cdot}8$
$p = > 0{\cdot}01$

Table VI

p th: $\pm o$
p th: $-x$

	$-x$	$+x$	
$+q$	18	4	22
$-q$	4	6	10
	22	10	32

$\chi^2 = 5{\cdot}6$
$p = 0{\cdot}02$

Table VII

p th: $+x$

	$-x$	$+x$	
$+q$	6	48	54
$-q$	28	20	48
	34	68	102

$\chi^2 = 25{\cdot}5$
$p = > 0{\cdot}01$

Table VIII

p th: $-x$

	$-x$	$+x$	
$+q$	54	8	62
$-q$	29	24	53
	83	32	115

$\chi^2 = 14{\cdot}9$
$p = > 0{\cdot}01$

Table IX

p th: $+o$

	$-x$	$+x$	
$+q$	14	9	23
$-q$	12	6	18
	26	15	41

$\chi^2 = 0{\cdot}146$

Table X

p th: $-o$

	$-x$	$+x$	
$+q$	27	22	49
$-q$	32	25	57
	59	47	106

$\chi^2 = 0{\cdot}116$

Table XI

p th: $\pm o$

	$-x$	$+x$	
$+q$	19	25	44
$-q$	13	13	26
	32	38	70

$\chi^2 = 0{\cdot}306$

(due to small marginal totals) is not sufficient. It may be noted that the obtained χ^2 for *Tables II, IV, V,* and *VI* are significant. Similarly, the combined data in *Tables VII* and *VIII* are highly significant, whereas the combined

data for *Tables IX, X,* and *XI* are not significant. These results are sufficient to justify the theoretical predictions made : i.e., there is a definite tendency for *p* to see liked people $(+q)$ in the group as agreeing in his judgment of *o*'s act $(+x)$ and disliked people $(-q)$ as disagreeing $(-x)$. The combined results in *Tables VII* and *VIII* and *Tables IX, X,* and *XI* indicate that the tendency exists with respect to *p*'s attitude toward *o*'s act only and not with respect to *p*'s attitude toward *o*. This does not mean, of course, that the basic unit (*pox*) is unimportant, for unquestionably persons are seen as sources of acts and the unit formation is reacted to by *p*. In the group, however, it is questionable whether *pox* units exist alone. They exist in a context of other people (*q*) who, while not seen as sources of the act attributed to *o*, are most certainly seen as having a *connection* with the act. These people may be the nodders or the dissenters, or may be seen as phenomenally connected with *o* (as friends or enemies) and, hence, connected with *o*'s act. In this sense, the *poqx* unit in groups is probably the more fundamental.

From these results it is apparent that unit formation is not a simple process in the group, but probably occurs only after some shuffling, by *p*, of many complicating factors. For *p* must achieve a stable unit with *o* and *o*'s act, and this must be done in a group where *p* has positive and negative relations with other people (*q*) who may or may not bear similar relationships with *o* or with *o*'s act. It is correct to say that *p* accepts or rejects an act *x* on the basis of the valence of *o* who is the source of the act. But it is more correct to note that *p* is also influenced by all other people in the group in his acceptance or rejection of *o*'s act.

The results of the process record. The only data from the process record relevant in the context of this paper are those related to agreement or disagreement in the group process. It will be recalled that the process record obtained nearly all verbal interactions occurring in the 1½-hour group session. These interactions were tabulated with notation to indicate, among other things, the initiator and the recipient of the verbal exchange. It is obvious that such data are, apparently, ideally suited to test once again the theory given above ; for the agreements or disagreements found in the actual group process should also be related to valence relationships existing between persons.

Once again, only the top and bottom 4 valences were used. The procedure involved nothing more than matching agreements and disagreements of *p* with the recipient *o* and determining whether the agreements were significantly matched with $+o$s and disagreements with $-o$s (in *p*'s life-space). The differences were not significant, since no differences were found. This was true whether the 9-o'clock or the 11-o'clock valences were used (that is, it made no difference in the results if the valence relationships found before discussion or those found after discussion were used). It was discovered that *p* was just as likely to agree as to disagree with the acts of either $+$ or $-o$'s. From the data obtained there is no relationship between valence (as stated in the impression questionnaire) and agreement or disagreement (as actually occurring in the group process). Since a significant relationship was found in the post-

meeting perceptions, it is necessary to discover the differences in the two situations in order to explain the discrepancy.

One immediately thinks of the methodological error in assuming valence constancy. There can be little doubt that this assumption is not completely tenable. Valence is not completely stable and is fragile to events that occur in the group. It is quite possible that the lability of valence could reduce to some extent any relationship of *pox*. It is not reasonable, however, that it should be reduced to zero ; the correlation of 0·94 between the two determinations of valence indicates enough stability to show some relationship.

A second possibility lies in an examination of the differences obtaining in the two situations. The situation in which a relationship between *p*, *o*, and *x* was found was one in which *p* is asked to state his like or dislike of *o* and is then asked to state whether he agrees or disagrees with *o*'s *x*. In this situation all responses are in *p*'s phenomenal world and exist as part of the same perceptual unit which is not a part of the group situation, although it would be erroneous to assume that the responses were not affected in some way by the group. In the process record, however, the data obtained are from the actual group process. *p* is *in* the group when he agrees or disagrees, and one may expect a greater dependency of *p*'s actions, in this situation, upon the forces present in the group. One obvious possibility is that group induced agreements or disagreements can occur which bear no essential relationship to valence. Unquestionably, this does occur and this would operate, once again, to lower any relationship (or even hide any relationship) that might be predicted from *pox* theory. It was seen, for example, in the data supporting the *poqx* unit, that a stable configuration for *p* (in the group) is always determined to some extent by *q*. This can vary, presumably, from a minimum influence to virtually complete influence. In the latter case it is, of course, the " bandwagon " effect. To the extent, then, that *p*'s judgment of *x* is affected by *q*, one would expect that much less relationship between *p*, *o* and *x*.

A third possibility is that the actual group situation permitted agreements or disagreements related to other, untapped variables. For example, it was observed in one group that two people who had the highest sort of positive valence relationship (both in and out of the group) frequently disagreed with each other. It is well known that only in strong affective relationships is it possible to disagree violently (for example, in the family, where one may observe the strongest valence ties, one frequently finds the most violent arguments). People who are close to each other are not only able to satisfy each other's central needs, but are also able to frustrate each other strongly, precisely because of this relationship. It is clear that this could operate in the actual group process but is not likely to be operative in the post-meeting perceptions.

A fourth possibility is that somewhat different resolutions may occur in the actual group process. One of these resolutions that the authors have observed in themselves during group sessions, and have reason to suspect is pretty general, may be called a resolution of " don't listen ". This behavior would cut across

agreements or disagreements and tend to hide their relationship with valence. It is not a *conscious* behavior in the sense that one is continually aware that one does this. It is, however, directly observable in behavior, and group members readily agree that it occurs. It operates in the group process similarly to the *pox* unit. A verbalized account might include the following : p th: $-o$ or perhaps, p th: $\pm o$ (neutrality) which leads to the thought that o can say nothing that p needs to listen to—at least, nothing relevant or important.

The fifth possibility is the lack of control in the group process in eliminating those cases in which p separates the person o from the act x. By this is meant that no correction for either clarity or typicality was possible in the process record. It is clear that if o's act was not cognitively clear to p, no relationship would be shown between o and x. Similarly if p thought x was not representative of o's behavior, no predictions of p's behavior could be made.

It is certain that all of these possibilities represent critical differences between the psychological situation of the actual group process and that of the post-meeting perceptions. It is clear that any one or any combination of these circumstances could have reduced the *pox* relationship in the process record to zero.

The *pogx* unit. This unit substitutes the group (g) for another person (q) ; it rests upon the assumption that groups may be viewed and reacted to phenomenally as a whole. The statement of the hypothesis to be tested here is similar to that for the *poqx* unit. That is, for example, if p th: $+x$ and p th: $+g$ a harmonious unit could exist if p th: g th: $+x$ (i.e., if p thinks the group thinks x is plus). If p th: $+x$ and p th: $-g$ the harmonious unit would be p th: g th: $-x$. If p th: $-x$ and p th: $+g$, the resolution to be predicted is that p th: g th: $-x$. Although it is impossible to draw rigorous conclusions from the data collected, it is nevertheless worth while to present them for the tendencies they exhibit.

The data to test the resolutions of the *pogx* unit were obtained from the judgment questionnaire. One question obtained a determination of what p thought of the events (x) as they occurred in the group. A second question obtained what p thought of the group (p th: $+$ or $-g$). Both of these questions required rating on a 9-point scale. A third question was a determination of whether p thought the group agreed or disagreed with the events. *Tables XII* and *XIII* give the results where p th: $+x$ (a rating from 7 to 9, *Table XII*) and where p th: $-x$ (a rating of 1–3, *Table XIII*) ; (the ratings from 4 to 7 (p th: $\pm x$) were omitted from the tables). The tables are oriented as follows: the horizontal scale is p's rating of g in which the low end of the scale indicates p th: $-g$ and the high end indicates p th: $+g$. The vertical scale is dichotomized, the upper half indicating that p thinks the group would reject the event and the lower half that p thinks the group would accept the event. In the body of the tables are the frequencies which the people in the group thought the group would accept or reject the events that occurred, in relation to what they thought of the group.

A positive conclusion could be drawn from these data if a significant piling

up of frequencies had occurred in the upper left- and lower right-hand halves of *Table XII*, and the lower left- and upper right-hand halves of *Table XIII*. That this could not occur is due to the fact that, apparently, in this group, no one really disliked it. In both tables only 2 ratings of the group place it below 5, the mid point. It is apparent that no conclusive statements can be drawn. Nevertheless, it is a fact that where the frequencies have piled up, namely, in the lower right half of *Table XII*, and the upper right half of

TABLE XII

***p* th: $+x$**

	p th: $-g$						*p* th: $+g$		
	1	2	3	4	5	6	7	8	9
p th: *g* th: $-x$					1		2	1	1
p th: *g* th: $+x$			2			2	8	4	3

TABLE XIII

***p* th: $-x$**

	p th: $-g$						*p* th: $+g$		
	1	2	3	4	5	6	7	8	9
p th: *g* th: $-x$					1	5	9	3	2
p th: *g* th: $+x$							1		

Table XIII, they are all in the "correct" direction for affirmation of the hypothesis. It is certainly probable that the *pogx* unit behaves no differently, in its resolutions from the *pox* unit. The significance of this, of course, lies both in the tremendous power of the group to influence *p*'s behavior and in the systematic relevance of *p*'s ability to "see" phenomenally a group and be influenced by the entity. The implications for larger groups, such as nations, are apparent.

CONCLUSIONS

The results of this experiment tend in all cases to support the hypotheses drawn from the theory of interpersonal relations. This paper constitutes another piece of evidence for the fruitfulness of theory made explicit. As Kurt Lewin has said, "Nothing is so practical as a good theory", and it is now possible to evaluate the implications of the results given here.

The results of the *pox* unit indicate that influence by the other person occurs

frequently in group discussion. People have generally felt that this was true. This experiment lends support to this contention.

The political adage, " whose bread I eat, his song I sing " is a recognition of the *pox* unit. In saying, " Don't bite the hand that feeds you " we recognize that we make psychological commitments to others that require certain kinds of behavior. It is recognized implicitly that we cannot knock our host. There is something ethically and psychologically demanding about being a man's friend if you accept his hospitality. Conceptually, this means that *o* is nice to *p* (*o* th: +*p*). This creates a force for *p* th: +*o*, since " like " tends toward a balanced relationship. And if *p* th: +*o*, he accepts *x*'s or acts connected with *o*. If he doesn't, of course, he must live with his tension or make other resolutions. It turns out that liking someone is a kind of subsidization both for the other fellow as well as for yourself. For *o*, it is a requirement that *p* must feel he is liked also ; for *p* it is an obligation, almost a psychological imperative, that he likes what *o* says and does. The crux of the *pox* data is that objectivity tends to be lost in the interest of psychological harmony.

The inverse is also true. If *p* dislikes *o*, it is psychologically difficult to accept *o*'s acts without either a change in *p*'s perception of *o* or a separation of the unit *o* and *x*. A third kind of influence for *p* with respect to *o* also certainly exists. This is neither acceptance nor rejection of what *o* says or does but is rather a disregard. It would seem that in many cases *p* does not listen to or does not understand *o*. This really means, of course, *p* does not have the patience, or the willingness, to listen or to understand, and this is also related to *p*'s attitude toward *o*.

Influence in terms of the *pox* unit is rarely made explicit by people, even though it occurs often. But influence in terms of the *poqx* unit is even more subtle. The results here indicate that all persons comprising *p*'s phenomenal awareness are potential influences on *p*'s behavior. It is apparent that this kind of influence occurs at every turn in a group's life. Every nod, shake of the head, or grimace by *q* in response to *o*'s act that *p* is aware of, will be a determinant of *p*'s behavior with respect to *o*.

Another implication of this research deserves explicit mention. Every person in a group attempts to assess the group attitude toward himself, and it is possible, with some accuracy, to determine one's position in the group. It is quite possible for a person who is predominantly positive to other members of the group to be aware of this fact and to " take advantage " of it. Indeed, it is impossible not to take advantage of it whether one is aware of it or not. It may be said with some confidence that many statements made in the group are accepted not for their intrinsic value, their cleverness, or their logical worth, but because of the high positive value of their source. Actually, the results of this research indicate that value, cleverness, or worth themselves are largely a function of *who makes the statements and to whom they are made.*[12] Our data do not give any clues as to how adequately group members can be trained to

[12] It is no doubt true that the valence of *o* is based " on early impressions ", which may include *o*'s actions,

function more rationally in the process of group thinking. It is interesting to note that the popular conception of who is a good leader is really the person described above : a person who gets things done and who has predominantly positive qualities to most people in the group. The use of the principles of interpersonal relations is given even a larger applicability if the concept of phenomenal group is employed. It is clear that, phenomenologically, larger entities than face-to-face groups may be seen and reacted to as a unit.

One further implication for future experimentation is contained in the discrepancy between the results obtained from the questionnaire and those acquired in the process record. If it appears that the *questionnaire* results can predict direction of influence by valence and the process record cannot provide this same degree of predictability, it would seem that there is some value in using questionnaires for determining stable units. The theoretical significance of the differences in results due to a difference in the method of collecting data are not clear. Aside from the fact that the questionnaire is more parsimonious, it is believed that in one real sense it taps a more stable picture of the properties of the group studied, at least in reference to the affective bonds between the parts of the group and the channels of influence due to the valences of the members of the group.

It seems clear from the results, that one cannot predict *actual* behavior in the group process from the questionnaire data employed in this experiment, but only from initial questionnaire to final questionnaire. For example, if *o*'s valence is plus (as rated by *p*), one cannot predict whether he will agree with a *particular* suggestion of *p* in the actual group process. It is no doubt much complicated by the context of the particular act.

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BIOGRAPHICAL NOTES

Milton W. Horowitz is an Assistant Professor of Psychology at the University of Kansas. He received his undergraduate training at the University of Connecticut, his Master's degree at the University of Nebraska, and his Doctorate at Stanford University in 1947. During the war he was a research assistant in psychology with the National Defense Research Council. He has published research on visual perception, and animal behavior, and in social psychology.

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BRIEFER STUDIES AND ANNOTATIONS

A CASE STUDY OF A GROUP SELECTION PROCEDURE

The First Trial of a Procedure for Selecting Candidates for Teacher's Training

LILY HERBERT

Introduction

This paper gives an account of an experiment in group methods of selection of teacher trainees. This experiment was carried out with the practical purpose of discovering methods which might eliminate certain difficulties experienced with the use of interview methods which had been the rule for many years in the Education Department of the Manchester University.

The candidates to be selected for training at present fall into two categories : (a) Senior pupils of Secondary Grammar Schools, most of whom apply for a Ministry of Education four-year grant to cover a three-year academic course followed by one year's training in the Department of Education ; (b) Undergraduates in the third year of their academic courses most of whom apply for a one-year grant to cover the year's training in the Department of Education as postgraduates.

Each candidate sends in an application form containing all relevant data, such as date of birth, schools attended, and examination results. This form is accompanied by a report from the Head of the School in the case of Four Year candidates and from the University tutor concerned with the candidate's academic course in the case of undergraduates.

The application forms and the reports are first examined by those tutors in the Education Department who are specialists in the candidate's Honours subject. Generally speaking, two tutors deal with each subject and two others examine the applications of Pass degree candidates. The selected candidates are then asked to attend for interview. A time-table is arranged by the

Administrative Assistant in consultation with the tutors concerned. Interviews are fixed at ten-minute intervals on a number of successive days.

The procedure just described had long appeared somewhat unsatisfactory to the selectors. Several of them had commented on the heavy strain it entailed for results which seemed uncertain, since the impression gathered in a ten-minute interview could be no more than superficial. Moreover, since as many as twelve or more candidates might be interviewed in one session and twenty-five in one day, the effect of fatigue was necessarily felt at the end of the session and the selectors' anxiety as to the reliability of their judgment increased steadily through the day. The strain was equally heavy—though for different reasons—for the candidates. It was not always possible to keep strictly to the time-table, and there was often a long period of waiting. A number of candidates waited at the same time and their anxiety was further increased as the result of their discussion of the anticipated ordeal. Some of the candidates who had come a long distance—often in very bad weather, as the interviews took place in February—felt somewhat frustrated when they realized the disproportion between the long journey and the short interview. All the candidates were keyed up to the utmost, knowing that everything depended on this precious ten minutes ; some had carefully prepared answers to anticipated questions that were not asked. Any attempt by the selectors at making the proceedings a more " natural " situation seemed to cover some snare which the candidate cautiously avoided by being less natural than before.

For all these reasons it was thought worth while to try out new methods. Already a pilot test had been carried out in the School of Education in an effort to devise a method of selection that could be used by the affiliated Training Colleges. It was an elaborate procedure containing, in addition to a group discussion, an intelligence test, sociometric tests, a study of values, a projection test, a word-association test, a ten-minute teaching session, a mock staff-meeting, and individual interviews. It seemed to me that group techniques could probably be used with much advantage and might be much simpler. Accordingly, as the interviewing of one-year candidates was scheduled to take place in March, I asked for, and obtained, permission to conduct an experiment in group selection for the Modern Languages candidates with whom I am normally concerned. There were twenty-eight candidates, twenty-five French, and three German, Honours students, the majority of whom were ex-service men, and all in the third year of their courses.

I feel it important to emphasize at this point that, though this new procedure was experimental, and therefore a learning experience for myself and my colleagues, the situation to which it was applied was a real and valid one. The issue was vital for the candidates. The justification for undertaking it was the reasonable hope that it would give the candidates a better chance than the old method. That it would give them the best chance possible could not be hoped at this stage, but we should at least begin to find facts that would help us to learn better methods.

Procedure

My first intention was to have four groups, each containing seven candidates. Unfortunately, this proved impossible for administrative reasons, and I had to be content with three three-hour sessions : one in the morning and one in the afternoon of March 17th, and one in the morning of March 23rd. We called three groups of candidates (10–9–9) at the available times. The numbers had to be modified later, owing to the candidates' examination arrangements, and the groups we actually interviewed contained eleven, ten, and six candidates respectively (one candidate had withdrawn his application).

I had the assistance of two colleagues. One of them, a woman, is one of a team of educational psychologists concerned with the special diploma in Educational Psychology ; the other, a man, is a tutor, in the Department in which the special school teaching subject is geography, who has specialized in the philosophy and psychology of education. My own training and school teaching experience are in Modern Languages, and I have had a psychoanalytic training. We all lecture in psychology and in method. Together we formed a fairly typical team of people working in a university training department. We met about a fortnight before the selection was to take place in order to discuss the procedure.

I was anxious to simplify the procedure as much as possible by reducing it to a straightforward method of comparison between the ten-minute interview method without previous acquaintance with the candidates, and one in which the individual interview would be preceded by a group discussion. We therefore decided to dispense with any additional data from tests that might be desired, but might obscure the issue.

We agreed to proceed as follows :

1. *Mutual Introduction, by the members of the Board and the candidates (without a time limit).*
2. *Group Discussion (45 minutes).*

Break

3. *Task Session (45 minutes).*
4. *Individual Interviews, linked with informal discussion between candidates and one of the selectors.*
5. *Evaluation Session with students.*
6. *Board meeting.*

Subjects for discussion were chosen (under 2) which were of a most general kind and required no technical knowledge. We did not decide beforehand which we should give out to each group or whether we should suggest more than one. We agreed to intervene as little as possible in the discussion.

Subjects for Discussion.

You are asked, as a representative group of young men and women, to arrive at a joint and unanimous *conclusion on the following questions :*

(*a*) *What, in your opinion, are the three main difficulties with which parents have to contend in their relations with the staffs of schools ?*
(*b*) *What, in your opinion, are the problems raised by co-education ?*
(*c*) *What do you consider to be the three most reprehensible forms of misbehaviour on the part of school children ?*
(*d*) *What, in your opinion, is the most suitable age for starting to learn a foreign language ?*

The Task Session (under 3) consisted in finding a topic for a study group, as follows :

Group Task.

Assume that you have been appointed to act as a Study Group of six members to investigate the present-day topic which you feel, as a group, is of the greatest importance for the well-being of the community at large, directly or indirectly. Your terms of reference are :

(*a*) *That the subject chosen should be one which all members of the group feel that they would be interested to work together on for the next three months. In addition, the results of the project should be of value as well as of interest to the community as a whole.*
(*b*) *That you will have three months to investigate, consider, and make a report on the project you undertake.*
(*c*) *That you will be able to consult and take evidence from any individuals or bodies you feel it would be desirable to contact for the purpose of the project, but that you will have to make all your own arrangements for this.*
(*d*) *That you will* jointly and unanimously *submit the subject you wish to undertake to the Committee which is financing the three-month study group project, at the end of the next 45 minutes, together with your reasons for making that specific proposal.*

The data before the Board were those described on page 77, i.e., application forms and tutors' reports. In addition, I had a very slight knowledge of some of the candidates, to whom I had lectured in the French Department in the 1947–48 session, their first year in the French Honours course.

Examination of the Procedure

The same procedure was used with the three groups, but produced different reactions. I propose to examine the various stages (see p. 79) as they appeared in the three sessions, in order to try to discover some of the causes of those differences, and their effect on the subsequent stages of the sessions. As it is obviously impossible in a short paper to discuss all the twenty-seven candidates individually, I shall refer only to those whose behaviour provoked very clear and important reactions from the group or from the Board.

MUTUAL INTRODUCTION

Group I

Ten candidates : six men, four of whom were ex-service men, and four women.

The Board sat facing the group. The three members of the Board felt under a strain on account of the unfamiliarity of the procedure. We gave out the minimum of the most impersonal facts about ourselves. I led off and, after explaining the procedure, stated that I had had many years of experience of teaching French in a Grammar School and was now a lecturer in Education in charge of most of the Modern Language students. I was mainly engaged in teaching Method and Psychology. I also alluded to my former acquaintance with some of the candidates when I lectured to them in the French Department in the first year of their Honours course. My colleagues introduced themselves even more briefly : one as an Educational Psychologist with some experience of teaching young children ; the other as a former Geography master in a Grammar School, now mainly interested in the Psychology and Philosophy of Education. All the information given was of an academic and professional kind.

The candidates took their cue from us, and they too referred to their academic courses on the one hand and to their professional interests on the other. Three stated that they were mainly interested in methods of teaching ; one in examination methods ; two referred to the selection procedure, and one said that she hoped to learn something from it.

I was disappointed to find that, on the whole, this introduction was of little value, and I tried to discover why. One thing seems clear : the members of the group could not be more natural in their attitude than the Board had been. Further, they reflected the mood of the members of the Board : our own hesitancy had its counterpart in theirs. Lastly, they accepted the pattern of introduction set up not only by the Board but by the first member who spoke. It is remarkable that all of them mentioned their eagerness to learn. One woman candidate, Miss G., said that she was interested in Reformatory Schools. This was divergent from the general pattern and must have expressed something purely personal ; it was not taken up. All tried to impress the Board as would-be learners—a clear response to the Board's academic attitude. " You teachers like good pupils : see how good we are ! ", they seemed to say.

Group II

Owing to some administrative difficulty, this group was larger than anticipated. It was composed of eleven candidates ; nine men, eight of whom were ex-service men, one a young German refugee who had come to this country when very young, and spoke without a foreign accent, and two women.

This time, at the suggestion of one of the selectors, the members of the Board did not sit together but mixed with the group, though a little behind them. That this was a mistake first appeared through the tendency evinced by all candidates to turn round and address themselves to one or other of the selectors—a physically uncomfortable process which proved to be a psychological obstacle also. The situation was highly unreal. To sit among the candidates should have meant that we were mixing with them on equal terms. However, this was denied by various facts : we sat outside the circle and we did not take part in the discussion. The " reality situation " was that we were there to judge them ; they knew this, and so did we. For this reason our identification with the group was a mere pretence, and it became evident at a later stage that they felt and resented this. By refusing to be the " Board of Selection " we had damaged ourselves ; they did not trust us.

We had hoped that mixing with the group would make our introduction appear more real. To my surprise I found it more difficult than the first time to explain the procedure to the candidates. I was aware that they showed signs of anxiety : their behaviour was reminiscent of the attitude of examination candidates when, at the beginning of the examination session, the supervisor gives out instructions. The members of the Board did not succeed in making their introduction any more authentic. Much the same information was given as in the morning session, but with a greater appearance of haste, as if we wanted to get it over as quickly as possible. The fact that stood out was that we were all psychologists. I stated my lifelong interest in psychology. One of my colleagues said that she was an educational psychologist. The other began with : " I also am interested in psychology . . ."

Mr. A., the first candidate to speak, began his introduction by referring to his experience in the Army, where " he had undergone all sorts of psychological tests ". He disliked this form of selection because " it smacked of psycho-analytical procedure ". His words seemed to receive the approval of the male candidates and created a hostile atmosphere. That our spatial positions may have contributed to this was suggested when he went on to say that he wanted to teach displaced persons, a possibly unconscious reference to the " displaced " members of the board.

This opening contribution implied an overt critical attitude towards the selection procedure. The group now sought another approach. This was started by Mr. E., who stated that he was a married man and had a young child : he, therefore, was interested in education from a double point of view. All the remaining candidates followed his lead with variations on the theme of " wanting to influence young people in the conduct of their future lives ". Mr. L. wound up with a few observations on the relation between teaching and life.

In this group, as in the first, there was a great similarity in the candidates' contributions but only after the third member had spoken. It seems as if the group waited for a suitable pattern and on recognizing one, adopted it. The connection between the form of the candidates' introduction and that of

the Board is less clear. If, however, we consider Mr. A.'s criticism, which suggested that we were going to use them as guinea-pigs for an experiment rather than as real people, together with their later emphasis on responsibility or the children's future lives, the accepted pattern may well appear as a defence mechanism on the part of the candidates. " We are real people, not scientific specimens, and life is more important than your psychology ! " The Board may also have been reminded of their responsibility for the candidates' future lives by this device. The members of the Board were vaguely aware of these attacks, and they blamed the group for refusing to co-operate. The tensions were so strong that, for a while, they seemed to neutralize any possibility of action or expression.

Group III

This group should have consisted of the remaining seven candidates, the only ones who could attend on that day. One was absent. This reduced the members to six : four men, all ex-service, and two women. This time we reverted to the original seating positions, facing the group, who were arranged in horseshoe fashion.

We had previously discussed the mutual introduction procedure and decided to be more personal. I referred to my having been brought up in France, which brought forth a spontaneous exclamation from my woman colleague : " Well, I never knew that ! " This somehow broke the ice. She, in her turn, spoke about her schooling, referred to a period in which she had been blind, and mentioned her subsequent work with blind children. The other selector referred to his childhood in Northern Ireland. As a result of this increased authenticity, the group were interested and followed our lead. This time they spoke of their experience and of their reasons for wanting to teach. Mr. B. had a " big brother " who was a teacher and had made him interested in his work ; Mr. A. had had experience in a Secondary Modern School ; Mr. E. had a brother in the Department this year : both he and his brother were Oxford graduates ; Miss D. spoke of her religious education and its effect on her outlook. All of them—as the Board had done—mentioned their schools and spoke of their past. Mr. C. spoke bitterly of his experience of National Service as a " Bevin boy ".

Comparison with the two previous mutual introduction sessions showed that there was much less effort on this occasion to impress the Board by referring to academic and professional interests (Group I) or to fitness for a teacher's responsibilities (Group II). It was as if they were providing a picture of their personal history and leaving it to us to decide their future, i.e., to conduct the process of selection.

The conclusion that imposes itself from a comparison of this first stage, as it developed in the three sessions, is that the contribution of the group is in direct ratio to the Board's contribution. In other words, the group gives back what it receives. With Group I the response reflected our own hesitancy

and timidity ; with Group II it was a revenge for having been tricked ; Group III trusted us for having learnt the lesson of the need for authenticity.

GROUP DISCUSSION and TASK SESSION

Group I

The most striking aspect of both these group sessions was the attempt by one of the candidates to assume the position of leader. This began in the group discussion. The subject proposed was " What, in your opinion, are the three main difficulties with which parents have to contend in their relations with the staffs of schools ? " At the last minute, the Board decided to pose the question without the word " three ". This made the subject vague and limitless, which may have been an expression of the Board's hesitant and experimental attitude. In any case, the subject was a little difficult for other reasons : we, the Board, were obviously a " school staff " and there was the risk that we might feel ourselves criticized. On the other hand, the candidates were part of a school staff in the future and had accepted a certain pattern in deciding to become teachers. To criticize this pattern from the point of view of parents required an emotional switch round—not an insuperable obstacle, but still a real one.

One member started off immediately by demanding contributions, but the group clearly did not accept him as a leader, nor did they attempt to place anyone else in this role. He tried to create the atmosphere of a debating society : possibly as a reaction against him the group insisted on an informal conversation. This, however, proceeded very haltingly. The " leaderless culture " [1] of the group, coupled with the anxiety of both candidates and Board as to the efficacy of the new procedure, diverted everybody's attention from the subject. It was, of course, referred to, but quite perfunctorily, without any sign of interest or spontaneity. There were many silences, which the members of the Board found very hard to bear. So, instead of allowing the group to deal with these silences, we gave out a second subject, (b)[2] ; then a third, (d).[2] The candidates appeared disconcerted, and the discussion flagged. At first the dominant member's attitude appeared to two of the selectors as the sign of a strong personality. After a while, and partly through non-acceptance by the group, it became increasingly irritating to members of the Board, all of whom developed a strong negative attitude towards him.

This dominant member's attitude became particularly clear in the task session [3] : he made constant notes, called the attention of the group to the task in hand and summed up the discussion a little before the end of the session.

[1] The word " culture " is used as applied to groups by Dr. W. R. Bion in his articles on " Experiences in Group " (*Human Relations*, Vol. I, nos. 3 and 4, and Vol. II, nos. 1 and 4). His definition is : " I include in it (in the term ' culture of the group ') the structure which the group achieves at any given moment, the occupations it pursues, and the organization it adopts." (*Human Relations*, Vol. I, no. 4, p. 494.)

[2] See p. 80.

[3] See p. 80.

It was left, however, to quieter members of the group to formulate the actual subject for study. He treated this session, avowedly only a quasi-real one since it was based on an assumption—*Assume* that you have been appointed to act as a Study Group . . . as the *real* situation and did not look beyond it. It was as if everything depended on his being able to lead the group in the task session, an end in itself. He completely ignored what was the real situation, i.e., the selection of candidates for training.

However, it appeared that the group now gave him a role, but not the one he was seeking. They refused him the position of leader but made him into something like their clerk. This amounted to putting him outside the group except in so far as he was materially useful. He took down the minutes but never contributed anything original. All his suggestions were brushed aside. The aggressive tone of one of his attempts to make the group consider non-educational subjects—" Must we stick to education ? "—suggested his dimly-felt dissatisfaction with the role to which he had been relegated. It was as if he recognized it as a consolation prize for a deposed leader. He tried to recover some advantage by summing up the discussion, but he carefully omitted all attempts by members of the group to relate the subject to personal interests. Finally, he suggested a motion in the following way : " To get you—I mean, us—out of the deadlock, I shall suggest that we discuss the motion : ' That the present educational system is too narrowing.' " This was rejected as being too vague. Another member changed it to : " The training of teachers with regard to the modern educational system." Yet another, unconsciously reminding everybody that this session was part of a selection procedure, objected that this left out the qualities desirable in a teacher. The group finally decided on a subject that partly embodied her suggestion : " The selection and training of teachers with reference to the modern educational system." The evident agreement and satisfaction of the group on arriving at this subject suggested a healthy critical attitude towards the Board's present selection procedure.

Group II

The hostile atmosphere of Group II has already been mentioned.[4] A contributing factor was its excessive size. Eleven candidates proved too large a number to select from, for it was very difficult to follow their individual reactions. They too must have feared that they would not stand a sufficient chance of being noticed. The subject given for discussion, (c) : " What do you consider to be the three most reprehensible forms of behaviour on the part of schoolchildren " may have been the Board's unconscious reply to the hostility of the candidates.

The first member to speak mentioned disobedience as a reprehensible form of behaviour but added that teachers often brought it on themselves. After this first contribution, there was a very long silence. Other candidates made

[4] See p. 82.

half-hearted attempts to speak, but one candidate's previous remarks about psycho-analytical procedure [5] had produced their effect and the group were on their guard. There was no leader and no chairman. No important material came out, and the main interest of the session was in the constant silences. Once more, the selectors found the strain too hard to bear. They exchanged glances and from their scattered positions my two colleagues asked me in dumbshow to change the subject. I did so after half an hour, but with no success. During the break that followed, great disappointment was expressed about the candidates. We feared they were all of poor quality, but we found it especially difficult to make up our minds since there had been so few positive contributions.

In the task session, the roles were reversed. It was the group's turn to express its hostility in the form of the subject chosen. Once more, the candidate who had first spoken led the way by proposing a subject : " Crime among younger people." Since this is a topical subject the choice of it is logically understandable, but it is also notable that this group was the only one of the three that immediately proposed it—and finally accepted it, for they were " younger people " and were in aggressive mood.

The word " crime " contained an attack on the Board—" You provoke us to crime "—but an attack tempered by a sense of guilt, since the word has a moral connotation : to say, " we are criminals ", is to plead guilty. Thus the sense of guilt became a protection for the Board as well as for the candidates themselves who, especially during the process of selection, could not care to have their hostile wishes gain the upper hand. They turned their hostility against themselves—through the sense of guilt—and although their minds were made up, the discussion went on in desultory fashion. The contradictory trends—i.e., aggressiveness, guilt—prevented them from thinking constructively. The most conventional arguments, culled from daily newspapers, were advanced without any personal elaboration : the cinema, the decline in home life and religious practices, lack of deterrent punishments. Each argument was brought up and immediately dropped. On the face of it, this was a very " unsatisfactory " session, yet one that was to yield unexpectedly good results.

Group III

This group had, over the other two, the advantage of being a small one. The subject given was, (b) : " What, in your opinion, are the problems raised by co-education ? " If it is remembered that the mutual introduction session in this group had created a friendly atmosphere in which tensions had become relaxed, one is tempted to interpret the Board's unpremeditated choice on this occasion as the expression of a wish to co-operate, of " learning together ", in short, of the possibility for the group and the Board of being " co-educated ".

A candidate who had done two years' teaching in a Secondary Modern school spoke first and referred to this experience, particularly to the difficulty

[5] See p. 82.

of dealing with girls of 14 : they ruined the discipline of the class. One of the two women candidates defended the girls. She seemed afraid that in the " here and now " situation, the men were having it all their own way. This became more evident when another man, agreeing with the first speaker, used such technical terms as *Oedipus* and *Electra complexes*. At this point, the second woman candidate stated in a subdued but aggressive tone that psychology was a dangerous subject ; that women spoke in simple, common-sense terms, whereas men tried to be " scientific ". The pairing was clear : two men, two women. One member, in what seemed a violent effort to undo the pairing pattern, tried to show that girls and boys could gain from co-education. He blushed and stammered as he spoke, but made an intelligent contribution. Another member talked of corporal punishment that could not be administered to girls, even though they deserved it. The women candidates felt the blow and countered it by arguing against corporal punishment in general. All this time, one candidate kept completely silent, while another, wanting an ally, challenged him but he persisted in his silence. Almost at the end a second subject, (d),[6] was offered for discussion merely in the hope of rousing the silent member, but without avail. He sat throughout the whole session looking sullen and resentful.

In the task session, however, the previously silent candidate spoke immediately after one member, who very clearly led the discussion, had suggested that a field of study should first be selected and then limited by the conditions laid down in the terms of reference. He agreed, but with the proviso that the subject should be such that one could remain entirely impartial and objective : a form of verbal explanation of his silent attitude in the discussion session. The importance he attached, however, to the avoidance of emotional issues could be seen both from his subsequent rejection of moral problems proposed by others, and from his own proposals : " The influence of television ", " Diet in Northern Britain ", etc. To those subjects the two woman candidates objected. One suggested : " Ought the atom bomb to be banned ", but others thought that this was not a subject for research except by a religious group. They finally agreed on " Juvenile Delinquency ", and the silent member fell silent once again. To have objected to this subject as one involving emotional issues for himself would have been to acknowledge that the group had recognized his aggressiveness, so he relapsed into silence.

INTERVIEWING

Of all the stages of the selection procedure the interviews involved the least strain both on the Board and on the candidates. It might even be said that there was a general feeling of comfort and security that came as a surprise to the interviewers themselves. Comparison with the old form of interview certainly imposed itself and the contrast strengthened the sense of relief. It was interesting to find that this held good even in the case of Group II, whose

[6] See p. 80.

group sessions had appeared " unsatisfactory ". There was ample evidence that the candidates experienced the same feeling of relief. This was largely due to the fact that the interviews were linked with an informal discussion between the candidates and one of the selectors. Instead of having to wait in the usual way for their individual interviews, the candidates were given the chance of asking questions and discussing anything they wished while the interviews went on. They were called one by one from this meeting when their turn came. The impression received every time the door opened was of a very lively group indeed. This was later confirmed by my colleague, who found all the candidates most eager to take part in the discussion in a perfectly spontaneous and natural manner. The strain was considerably eased in this way.

The attitude of the candidates as they came in for interview was in striking contrast to what we had been accustomed to encounter. They walked in as if they were meeting old friends whom they had known earlier in difficult circumstances. We had shared an experience and they were anxious to go over it with us. In the great majority of cases there was no need to ask the candidate any questions in order to start him talking. It was sufficient to suggest that he should tell us anything that he considered might be of interest. Criticism and appreciation of the procedure were expressed—and received—freely. Sometimes the candidate became so interested in the discussion that one almost had to remind him that this was the final selection session and that we needed some precise individual information to help us to a decision. Some factual questions had to be disposed of, such as the candidate's position with regard to National Service, or the kind of school in which he would like to teach. But the main use and interest of the interview was to elucidate, first, the candidate's personal motive for wanting to teach; and, secondly, his experience, if any, with children and his attitude to them. His relations with staff and superiors could largely be judged from the group sessions, but the interview was useful as a check to confirm or correct these impressions. It was a gratifying experience to find that one could obtain replies that sounded authentic. The kind of prepared, stereotyped replies one used to receive to questions on the candidate's choice of the teaching profession—" Oh, I have always wanted to teach "; " Well, you see, my father (or mother) is a teacher "; " I love school and I do not want to leave it for good ",—were pleasantly absent. So was the eternal reply to a question about reading interests: " Oh, I like Dickens . . ." The candidates considered the questions seriously and tried to produce helpful replies. It was as if they felt in closer contact with the Board and realized their difficulties.

I propose to describe, in connection with each of the three groups, examples of interviews I conducted.

Group I

Interviews with those candidates in Group I who had made positive contributions, mostly confirmed the impression we had received from the group

sessions. The case of the dominant member was particularly interesting. He would not criticize the procedure and kept strictly to material questions. Reference to his application form showed that he had never held any position in the University Societies, and his French tutor mentioned his lack of originality. There was no doubt in our minds, however, that he would have given the impression of a strong personality if the selection had been confined to a ten-minute interview. In fact, he had done so in the first few minutes of the group discussion. When it came to the question of his motives for wanting to teach, he showed a curious lack of serious thought. He " thought he would like it " ; " No, he had no experience of children, but he expected he would get on with them, especially the older ones." One was left with a strong, though not absolutely verified, impression that lack of initiative and the need for security rather than a deliberate and positive choice had influenced his decision to become a teacher. These are not uncommon motives but, on this occasion, our judgment was more strongly supported by experience than it usually is.

A woman candidate, on the other hand, who had been very quiet at the beginning of the discussion, but had shown some strength of personality in the task session, confirmed this latter impression during her interview. She discussed the procedure intelligently and suggested that things would have been easier if the Board had come forward more. Though she was referring to our abstention from the discussion, which was deliberate, her criticism was legitimate with regard to our insufficient personal introduction to the candidates. She had had a little experience of teaching and made some interesting remarks about her own change of attitude towards discipline during her school years.

When we came to deal with the " silent " or " almost silent " candidate, the interview took longer, since we had to obtain more information from it ; and there were some pleasant surprises. I had interviewed this candidate in the preceding year and had rejected her. She had applied again on this occasion and—possibly under the effect of this failure—was almost silent throughout the session. Her behaviour in the interview was entirely different : she spoke a great deal about herself ; referred to her own shyness both directly and indirectly—mentioned children who find it difficult to answer questions in class—and had obviously lost a good deal of her anxiety. I still felt that she was not suited for the teaching profession and so could not give her a high mark, but the therapeutic effect of the group was evident. She had had a much better chance of giving a good account of herself.

Another candidate had his mark raised from B to A as the result of the interview. When asked about his outside interests, he showed wide literary scholarship. He was one of the few candidates who had thought it worth while to read widely in English as well as in French. He had done a little teaching, and spoke intelligently and sensitively about the children in his class. The interview here served to fill the gaps left after the group sessions.

Group II

In this group there was one candidate who underwent a complete change as the session developed. His hostility to what he had disparagingly called "a psycho-analytical procedure" gave way in the interview to an honest curiosity which he expressed spontaneously: "I really must start learning something about psycho-analysis." He described some of his Army experience as an instructor. He had read widely in various fields and displayed an unusual maturity of outlook in his attitude to children.

It was found that all the candidates of this alarmingly hostile group had made a great many intelligent contributions to the informal discussion linked with the interview. This part of the session, in which we again reverted to our selectors' roles, corrected the unfortunate impression we had produced of using them as guinea-pigs for our experiment.

Group III

Interviews with the members of this small group were quickly over. The group dynamics had been such that they had given us a good idea of the personality of each member. The member who had held aloof spoke of the bad effect on him of his National Service. He felt degraded by it and told of his experience with some vehemence. He admitted candidly that he was not particularly interested in children, in fact "did not know anything about them". His decision to teach, when it is considered together with his very strong feeling of having lost caste, was probably a means of rehabilitating himself in his own eyes by entering the most accessible of the "respectable" professions. Nevertheless, he did not show surprise or resentment when we advised him to seek a different kind of work.

There was, however, some sign later that his critical attitude had reasserted itself and that he attributed his failure to the Board's prejudice, for he persuaded his tutor in the Faculty of Arts to inquire into the reasons for his failure. We were able to give precise data which the single interview could not possibly have revealed. His is a case in which the candidate's negative attitude in the group session reinforced the impression that an interview would in any case have produced. From the point of view of the selectors this had the advantage of allaying any doubts that the later inquiry would have produced.

The other five members of this group were more enthusiastic than all the other candidates about the procedure—an understandable result in view of the good relations established from the beginning.

EVALUATION SESSION WITH CANDIDATES

Groups I, II, III

After the interviews and before the Board meeting the selectors returned to the room in which the candidates were assembled. I asked them to give us their impressions of the procedure and explained that we expected a sincere expression of opinion to be of great value to us in conducting this kind of work.

In all the three groups, the opinion, as verbally stated, was overwhelmingly in favour of it : it was felt to be a great improvement on the usual interview method. In every group several candidates stated that they had " enjoyed " the session. One said that he had at times forgotten the real aim of the sessions, so interested had he become in the discussion. No adverse criticism was expressed, and hardly any constructive suggestions were brought forward. Very few candidates abstained altogether from voicing any opinion and one woman candidate in Group III said that she would have liked a more precise task in the third stage.

Such a large measure of approval calls for some examination. Several reasons suggest themselves : first, the procedure had already been discussed during the interviews and in the group discussion linked with them ; second, the feeling of relief experienced after the discussion and task stages made the candidates somewhat averse to any more constructive thinking ; third, the issue was simplified by their awareness of the comparison with the usual interview method, i.e., the alternative to this procedure would have been much worse. Yet, when all these factors have been considered, it does not seem incautious to conclude that there was a positive feeling of satisfaction among the candidates and an appreciation of the equity of the procedure.

EVALUATION BY THE BOARD

Each member of the Board gave a mark to every candidate for each session and an overall mark at the end of the last stage. According to the practice in the Department, literal marks were used ranging from A to E as follows :

A+	A	A−
B+	B	B−
C+	C	C−
D+	D	D−
E+	E	E−

There was virtual agreement among the examiners about the marks for Group III. With regard to Groups I and II there was a good measure of agreement also, but a good deal of discussion took place in the case of three of the candidates who had shown marked differences in behaviour in the interview as compared with the group discussion. The considerable measure of agreement reached calls for some comment. On the positive side it suggests a great desire to co-operate, but may also be interpreted as a defence mechanism against the need to accept responsibility for a divergent opinion. At any rate, it is necessary to be on the look-out for such a device : complete and unqualified agreement may be as much of an alarm signal as irreducible disagreement.

The greatest gains achieved by this procedure were found in the relief from strain during the interviews and the possibility of forming judgement supported by a knowledge of the candidates in a group situation. We had

gathered from the candidates' remarks that they also had felt the session worth while ; we had spent a long time examining them and the procedure had been more than a perfunctory exchange of questions and answers. Against this easing of the strain during the actual interview, one must place the increased tensions during the discussion sessions. All members of the Board found these hard to bear, a fact which was expressed by the constant desire to break the silences by changing the subject. We could not reach complete agreement on the advisability of offering more than one subject for discussion.

Comparison of the three groups leads to the conclusion that the optimum number for selection groups was 7–8. Group III, with its six members, had been the easiest to deal with. Groups I and II proved too large. This is an important practical question since there are a large number of candidates to be examined and little time in which to do it. If some group selection method were to be adopted, it would be necessary to make the total time involved not much longer than it was under the interview system.

Discussion

In this trial run, group selection methods offered a greater chance of reasonable judgement than the single interview ; the optimal size of the groups being 7–8 members. The Board was required to preserve an authentic attitude, and any departure from such an attitude aroused anxiety in the candidates, who had to be able to look upon the Board as a group of people who had the necessary knowledge and experience to select wisely and fairly. The selectors *qua* selectors had to remain *different* from the candidates ; on human grounds, however, they could identify themselves with the candidates and give them a lead in authenticity.

In the group discussion, it is possibly preferable that only one subject should be given out for the whole session. Whatever the dynamics of the particular group, the members should have the chance of dealing with the problems they raise with the least possible interference. The hostility shown by Group II at the beginning of the mutual introduction session was used by some members in a sublimated form to express their aims in taking up teaching. In Group III's discussion, one candidate's persistent silence was challenged by another member of the group. The Board's attempt to break it by offering a second subject proved fruitless. The effect of this technique was equally futile in every session. My own impression went further : I felt it had a negative influence. Changing the subject appears as an expression of the Board's disapproval, and increases anxiety. " You are no good at this one, let us see what you can do with this," is what it implies.

For this reason I should feel there are definite advantages in a leaderless discussion—suggesting to the group that they talk about anything they wish. We have seen that the Board's choice of subject was often an expression of their unconscious feelings. The leaderless method would possibly involve many painful silences and the tensions aroused might be considerable. The

temptation would be great for the Board to intervene in order to allay anxiety. It is not by any means proved, however, that the presence of tensions is an obstacle to the diagnosis of personality. The reverse is nearer the truth, since the way a man can deal with tensions is indicative of the strength of his personality. On the other hand, the Board might find them so hard to bear that their own judgement was impaired. In short, the anxiety permitted to subsist in the group must be measured by the balance between what the Board can bear and the task they have to perform.

A third possibility would be to give the candidates several examples of the kind of topic they might discuss, while leaving the final choice to them. This procedure would be less productive of tensions—an advantage in view of the limited time that can be given to the selection session—and it should avoid the effects of the Board's unconscious motivation when laying down a definite topic.

No attempt was made in connection with this selection procedure to state precisely in advance the qualities we expected to find in any candidate we selected as a teacher. There was, however, no important disagreement on this score among the members of the Board. Our experience in schools in the capacity of teachers, examiners, and supervising tutors gave us a common background which guided us in forming opinions of the candidates' suitability for the job of teaching.

We had a knowledge of the candidates' ability and academic achievements from the tutors' reports. These often referred to a candidate's intelligence; the group situations helped us somewhat in evaluating it. In the absence of a teaching session the candidates' attitude to the children had, as in the past, to be elucidated mainly through the interviews, but the group discussions often dealt with subjects concerning children, e.g., punishment, discipline, etc., and considerably helped our judgement.

This procedure also allowed us to judge the candidate's ability to deal with and resolve tensions. The teacher always deals with groups, and tensions appear in all groups. Two important aspects of his work, discipline and method, depend on his way of facing them. An easily disturbed teacher tends either to impose too strict a form of discipline or to be so afraid of exerting authority that the class gets completely out of hand. In his method of teaching, such a person will be inclined to "overteach" rather than wait for children to express themselves.

To arrive at a precise picture of the teacher's personality is an immense task. The old picture included abnegation, firmness, self-confidence, in addition to omniscience. It ignored the personality and psychological make-up of the individual teacher, and it was precisely in the diagnosis of personality traits that the group selection procedure proved most useful. It was possible to foretell with some degree of probability the candidate's willingness to co-operate in the school situation. This requires the combination of two attitudes: contributing to the common task, and allowing others to make their contributions. Positive contributions, that have the effect of helping

others to come forward, point to some quality of leadership. Further classification of the nature of these relationships would contribute markedly to the usefulness of group methods as an observational situation in teacher trainee selection.

* * *

Note

This experiment in selection was carried out under the guidance of Mr. E. L. Trist of the Tavistock Institute of Human Relations. A number of the interpretations in the report were elaborated in discussion with Prof. R. A. C. Oliver of the University of Manchester.

BIOGRAPHICAL NOTE

MRS. E. L. HERBERT graduated in French at the University of Manchester. She taught for twenty years at the Manchester High School for Girls, where she was in charge of the Modern Languages Department and occupied the position of Deputy Head Mistress for four years. In 1945 she was appointed Lecturer in Education in the University of Manchester. She had previously undergone a psycho-analytic training. She studied group techniques at the Tavistock Institute of Human Relations during the session 1949–50 for the main purpose of examining human relations in schools. She is now leading free discussion groups for teachers in the School of Education of the University of Manchester.

TOWARD A SYSTEMATIC FIELD OF RACE RELATIONS

A Heuristic Statement of Objectives[1]

PERCY BLACK

I. The Field: What it includes, and what it excludes

All the social sciences are concerned with two matters: the sayings and the doings of man. The field of race relations, in so far as it is an area of the social sciences, is concerned with sayings and doings between different groupings of men—racial, ethnic, religious, cultural. Though the area might be stretched to include the relations between still further groupings, such as national, social class, regional, occupational, sex, etc., these are not customarily applied here except in so far as they refer to the four groupings, racial, ethnic, religious, cultural.

As in almost every area of human life, so also in the area of race relations, the ideas, both explicit and implicit, overt and covert, by which men guide their behavior imply some value system. Men do and say things in terms of what they consider important to themselves, for "good" or for "bad", for "proper" or "improper", for "conventional" or "unconventional". Unfortunately men, both as individuals and as collectives, very rarely if ever, are consistently consistent. More often than not, the sayings and doings of humans are illogical, and even harmful to their own welfare. But, as in the early history of medicine, it is the aim—or should explicitly be the aim—of social scientists not merely to study the harmful and the healthy, but also to attempt to conserve welfare wherever it is found, and to help bring it about wherever it is found wanting. If social scientists are merely concerned with studying the numerous behaviors of man without at the same time being actively concerned with—or at least having in mind as an ideal toward which to strive—the ultimate welfare of man, then their study is sterile, worthless. The worth of a study of racial and cultural relations lies only in the willingness of social scientists to make explicit the humane goals toward which their work is directed. It is understandable that some social scientists should fear making rash statements about what should and should not be done to improve human welfare, e.g., race relations, but in so far as they do not even state what they feel ought to be done and make some attempt to see that it is done, they are missing one of the finest opportunities to test their ideas. Surely mistakes will be made; so long as men are what they are, mistakes will be

[1] Many thanks are due to Professor Louis Wirth, without whose suggestion this paper would not have been written. The responsibility, however, for all things—good and bad—in this paper is the author's.

made ; but an overcautiousness about making mistakes, taking chances, can gain man nothing, certainly not the further progress of social science.[2]

It is for these considerations that an earnest plea is put forth for the establishment of a committee of social scientists to study the aims of social scientists with regard to what they consider to be the best form for racial and cultural relations. How should men behave ? Unless social scientists can give definite, concrete answers to such questions, the further study in the field of race relations will be hampered by the inability of social scientists to state their objectives clearly and concisely, so that laymen all over the world can readily take hold of them and live by them. If mistakes are made, if we find that more harm is done by such tactics than was anticipated, then new " medicines ", new " cures ", will have to be sought after. But what are needed now more than anything else are social scientists who are at the same time statesmen, willing to stand up and tell people that the medicines they have been using are no good, why they are no good, and what new medicines they propose to administer. We need a rebirth in the social sciences ; a restatement of purposes and ideals ; a rededication to the highest welfare of man ; a code of ethics by which we can guide our lives as social scientists, so that others, too, may be guided by knowing where we stand. In no field is this more urgent than in the field of racial and cultural contacts.

On the basis of this discussion, a tentative definition of the science of race relations is here proposed. Race relations, as a field of social science, is the study of the behaviors between racial, ethnic, cultural, and religious groups of people, with a view to understanding the dynamics of social intercourse peculiar to these behaviors, in order that the best interests of these groups may be preserved or remedied wherever they are threatened or disrupted.

II. Some Aspects of, and Strategy in, Race Relations

We have seen above that the study of race relations cannot, and should not, be divorced from a consideration of value judgments about what the ideal (ethical) patterns should be. In this section we propose to examine very briefly some aspects of race relations. On this subject there is already an abundant literature ; repetition is one of the problems in this field.

Where " good " race relations exist, such a relationship is apparent to any trained observer—i.e., to one who holds to some universally accepted ethical code, such as the American credo. No tests are needed, no intensive investigations need be made in order to make the generalization that race relations in Brazil, for example, are better than those in South Africa. But, suppose that an Afrikaner protests, with the claim that the Negroes in that country are content with their lot, that there is little, if any, hard feeling between

[2] The objection might be raised, and with good reason, by wary social scientists that this " welfare " concern falls essentially in the realm of applied science—" social engineering "—rather than in social science proper. The author, himself, concedes this point but considers it unnecessary at the present time to be overcautious as to the exact limits of the one or the other, especially in an (as yet) unsystematic field. For this reason, then, the term, social science, will in this paper be stretched to include both the " science " and the " engineering " aspects of race relations research.

white and Negro, that the Negro knows his place and is satisfied with it because he knows no better, and that instead of our deprecatory characterization there is actually quiet contentment in the land—can we therefore say that race relations in South Africa are "good"? Not at all. Nothing is so spurious as the claim that as men become content with enforced ignorance, slavery, filth, and discrimination, such a situation is ethically justified or justifiable. Inasmuch as there are some universally accepted codes of ethics, men cannot condone their hurtful acts to others because the latter have become insensate.

The point we wish to make is that "bad" race relations may be said to exist both in those situations where an explicit legal, determined, and conscientious attempt is made by one racial, cultural, ethnic, or religious group to discriminate against another, as well as in those situations where these discriminations are not conscientious, not legal, and generally recognized as unethical. The problems are different, but the overt manifestations are the same, especially for the group discriminated against. There are important differences, however, and these must always be taken in account whenever an attempt is made to move toward better race relations, towards social change.

The latter point is a very important one. Often as we have made a great deal about the need for an explicit statement of the ideal in race relations, we recognize, nevertheless, that in order to effect such a situation where it does not already exist, we must temporarily subdue our ethics in order to study the objective situation in terms of the phenomenological world of the participants. In other words, we must first know how the discriminating group perceive their relationship to the victimized group, and how the latter react to this discrimination. Only when we have this information is it expedient, and then only with great caution, to initiate steps to change the situation towards a better ideal. We should take advantage of the scientific knowledge we already possess of the requirements for changing peoples' attitudes, and avoid the antagonizing effect of urging change in terms of our own ethical code.

In conclusion we should point out that bad race relations may exist as part of the normal patterns of a group where the behavioral patterns of a group are in accordance with their ideal patterns. There may be little evidence of discontent on the part of the victimized, yet the situation, from our standpoint, is bad, unhealthy. Where such race relations are abnormal—where the behavioral patterns are not congruent with the avowed ideal patterns —discontent may be found to be rife, yet the objective conditions of the victimized group may be better than the victimized group in the "normal" situation. Both situations are "bad" but different approaches are required in changing the "bad" to "good". What these specific approaches should be must be determined by an intensive study of the situations. The techniques used in one instance with success might very well be most dangerous to use in another. Caution, sound judgment, and the fine art of governing and persuading men are the *sine qua non* in effecting healthy race relations.

III. Areas of Race Relations

A. "Anatomy and Physiology"

In the above section we indicated three aspects of race relations which could be summarized thus: (a) good race relations; (b) bad_1, where the socio-culture overtly condones hurtful discriminatory behaviors; (c) bad_2, where the culture does not condone discriminatory behaviors but the society does. In this section we shall merely outline the major areas of study of these aspects. These areas relate to all three aspects.

1. *The Individual and his group.* Interest here focuses on the positional and dynamic aspects of the socialization process, of status and role, of expected and actual. Answers here *qua* answers to the problems in race relations can become clear only in so far as the answers are clear with respect to general sociological and psycho-social problems. A proper understanding of the problems in race relations involves an understanding of other social problems as well.

2. *Social Dynamics.* Related to but not necessarily identical with a study of the individual as a member of society, is a study of the processes of group interaction. Such problems as rivalry, conflict, accommodation, assimilation, adaptation, co-operation, etc., fall properly under the study of social dynamics. As above, a proper understanding of race relations, both the "good" and the "bad" forms, involves an understanding of the larger problems of the study of society.

3. *Socio-legal Aspects.* Whereas the above two areas are concerned with the behaviors of people as individuals and as collectives, as manifestations (often) of local mores and *leges non scripta*, the present area for study is concerned with the actual codes and laws—the "rules of the game". How do rules come about? Why are they strictly adhered to in some circumstances and very little, if at all, in others? What circumstances facilitate the enactment of certain laws and not of others? If we can know the answers to questions such as these, we shall know the answers to similar questions as they relate to laws in the race relations area. Meanwhile, however, the urgency of the problems in the race relations area are so great that we cannot wait till more definite answers are forthcoming in the general area of the social sciences. It is necessary, therefore, to push ahead alone in this field as far as we can, bearing in mind always, however, that it is best to place our research in the wider framework of the social sciences generally. This point cannot be urged too strongly for, while it is recognized in the literature, it is far from adhered to in actual practice.

B. Prevention and Pathology

In *A*, above, the general areas of race relations were marked out. The purpose of this section is merely to indicate that once we have general principles in these three main areas, both for the dynamics of "good" and "bad" race relations, we are in a better position to control the conditions making

for " good " or " bad ". We must, therefore, study *A*(a), *A*(b), and *A*(c), wherever " good " relations exist in order to know how to preserve them, and thus prevent " bad " relations from setting in ; and we must study them likewise in areas where both types of " bad " relations are found, in order to introduce conditions designed to change them for the better. Again we must emphasize, as we did above, that during the study of these problems, we must temporarily dissociate ourselves from our ethical code in order to prevent it from making us purblind to the actual situations observed. Like ethnologists studying a foreign culture, we must deliberately and conscientiously take off our own *Kulturbrille* in making our observations and our analyses ; and, like the psycho-analyst, we must be *aware* of our own emotional and mental processes during the course of our " clinical treatment ", but we must never let them enter into our overt relations in the situation, nor into the analysis of its causes.

IV. A Proposal for a Hierarchy of Priorities

Probably the most pressing problem in the study of race relations is the problem of what to study. To which areas shall our energies be directed for the most fruitful results ? Which things are more important for study than others ? To answer these questions wisely and fully it would probably require a standing committee of experts in the field to chart the course and plan new strategies as each project is completed. In this section we propose merely to outline a course in terms of a hierarchy of priorities. That is to say, we wish merely to indicate tentatively where we ought to travel and which things we ought to consider as of greater importance than others in a descending scale of importance.

The problems of race relations can be thought of as consisting of long-run objectives and those of a more immediate nature. Thus, with respect to the long-run objectives, this field can be studied from a world viewpoint —the movements and contacts of races and cultures on a world scale. Though this is an important area for study, it is, however, not as pressing as some of the more urgent problems arising out of racial and cultural contacts on a national, regional, or community scale. These latter form, perhaps, the major concern of social scientists in the field.

1. *Social Change.* Once the scale of our problems is brought into focus, it is then necessary to ask ourselves what, precisely, we are trying to do. If, as we indicated above, our problem is essentially one of finding out what our problems are, and then solving them in accordance with some explicit ethical guiding code, then evidently we must give top priority to a study of how we can effect social change in accordance with some set plan. This means, in effect, that we must find out how to effect changes on a national, regional, and community scale. To do this we must know more about the three areas referred to in our discussion of the " anatomy " and " physiology " of race relations. Top priority should therefore be assigned, in these areas, in reference to an understanding of the dynamics and control of social statics

and social dynamics. We must learn what to do in given circumstances in order to achieve desired ends. This, in our opinion, should form the basis of our priority thinking in the distribution of funds and energy for certain projects.

2. *Socio-legal studies.* Closely akin to priority number one is the problem of effecting social legislation towards desired ends. As in medical practice, certain " cures " in the social world may sometimes require long periods of time. But again, as in medicine, the patient (e.g., sick society) should be given every possible, though temporary, comfort to relieve him of immediate distress. Thus, priority number two should be given to projects aimed at the immediate relief of distress wherever " bad " race relations have developed.

3. *Attitude Change.* Social arrangements may change, new laws may be enacted—all to the benefit of the underdog in society. But these social rearrangements do not of themselves necessarily and correspondingly rearrange people's attitudes of prejudice, antipathy, or hate. To develop tolerance, neighborliness, and " love ", in the largest sense, in the hearts of men, requires techniques much more subtle and often more difficult than either of those required for priorities one and two. However, from the point of view of the urgency of the problems to be solved, priorities one and two seem to present greater immediate demands than the present category. Nevertheless, though these matters are presented in terms of priorities, it is not to be understood that we mean that one thing is to be done at a time. Indeed, it would be to the mutual advantage of the three priorities if scientific research and action programs were carried out in all three simultaneously. The point we are making, however, is that our attention should be directed to tasks in terms of their immediacy or urgency, in order to achieve the most desired results for all of our undertakings.

V. Methods and the Problem of Validity

Though the charting of a theoretical orientation is of paramount importance, the problem of achieving our ends—methods—still remains for us. In this respect there are already several excellent inventories of the various techniques used in the reduction of prejudice, such as the monographs by Arnold Rose [3] and Robben Williams.[4] These are, for the most part, probably more concerned with a survey of the methods which we would place in area three of our discussion, namely, the rooting out of hatreds from the minds and hearts of men. And, while these studies and action programs are important, there is still the important task of summing up the host of hit-and-miss methods which would probably fall under areas one and two of this paper. As we indicated above, we would give greater priority to the latter than to the former. In short, there are two broad areas of research-action programs, the psycho-social and the sociological; we propose that

[3] *Studies in Reduction of Prejudice.* Chicago: American Council on Race Relations, 1948.
[4] *The Reduction of Intergroup Tensions.* New York: Social Science Research Council, Bul. 57, 1947.

the sociological be given priority over the psycho-social for reasons indicated in Section IV.

The problem of means also involves the related problem of testing their validity: do the means accomplish what they purport to accomplish? This is a very important problem in itself and deserves the attention of solid original thinking on the part of research workers and theoreticians.

Both with respect to methods and validity it seems well to indicate that, theoretically, there are two approaches, the long-run and the short-run. For some immediate, pressing problems of "bad" race relations, for example, short-run methods must be found for relieving distress, while steps are taken simultaneously to effect a cure. But on the road from the "start methods" to the "end methods" we must have indicators of how well we are accomplishing our ends. In other words, what we require in the scientific planning of research in race relations is a charting of the course and estimates of what we are to expect along the way step by step. If action research officials could lay down master plans and follow them through, with flexibility, of course, we would at last be on the road to a scientific attack on the problems of race relations. Experience gained from such well-charted courses would be of inestimable value for the future planning of other courses of action.

VI. Some Immediate Objectives for Scientists in Race Relations

The following is a tentative summary list of immediate objectives as we see them for social scientists in race relations. The list is not to be taken as all-inclusive but rather as a goad to the further thinking on these problems on the part of our fellow social scientists.

1. A generalization which could probably meet with general approbation is that we ought to be very careful about making easy generalizations in our field. Further we ought to be critical, though not unsympathetic, toward the generalizations of our fellow social scientists. We ought to be wary about forming our own cults and about those of our fellows.

2. Each one of us ought to examine the covert and overt assumptions on the basis of which we endeavor to carry out our respective projects. We ought to be able to know why—individually and as a group—we are interested in race relations altogether, and what our ethical aims are in this regard. We ought to be able to state them frankly, clearly, and concisely.

3. Our field bristles with problems which very few if any other contains. Strange as it may seem, it is precisely here that the layman thinks he knows the answers, and often feels he knows them better than the social scientist. Often the layman merely voices what he has read in some article on race relations written by another layman, or he repeats, more often than not, incorrectly, what he heard in his church, or saw at the movies. Our problem, therefore, is not so much the destruction of the layman's belief in authority but rather the transfer of his beliefs from an outmoded, false, often socially injurious set of beliefs and attitudes to a more modern, scientifically accurate, and socially beneficial set. It is essentially an evangelical type of work that we must set

ourselves to, bolstered by the attitudes and methods of scientific inquiry. More of our "academic" Ph.D.'s should become "de-academized"; and they should begin taking on the roles of engineers of society and stop talking about it.

4. We have already referred to the need of a committee of social scientists to set up a hierarchy of research projects in terms of priority. This seems so important, we feel it cannot be suggested too often.

5. One of the greatest immediate objectives should be to integrate the efforts of the many agencies now concerned with race relations. All could profit if their efforts could be co-ordinated through some central planning board. We can take more than a little comfort that an important step in this direction has already been taken through the recent formation of NAIRO (National Association of Intergroup Relations Officials), under the auspices of the American Council on Race Relations. Obviously, all social science, and consequently mankind itself, would be the beneficiary if an integration of research aims and methods could be made on a larger scale than within the limits of the U.S.A. alone. The Tensions Project of UNESCO seems to be the logical place for an integration of such activities on a world scale.

BIOGRAPHICAL SKETCH

PERCY BLACK is Secretary of the Committee on Education, Training and Research in Race Relations of The University of Chicago. Taking his B.Sc. in chemistry at Sir George Williams College (Montreal) in 1944, he has had considerable experience in acidimetry and alkalimetry in various chemical plants, and was also a Demonstrator in elementary chemistry at McGill University, 1945. He received the M.Sc. degree in psychology from McGill University, where he was assistant in general and social psychology for two years. He received the A.M. degree in social psychology (minor, social anthropology) in 1948 from Harvard University, where he was an assistant to Professor G. W. Allport in social psychology. Since then he has taught sociology and anthropology at the University of Kentucky, and at present is assistant to Professor Louis Wirth in the Seminar, "Race and Culture Contacts", at The University of Chicago.

BOOK REVIEW SECTION

(*Shorter Notices*)

The Dynamics of Prejudice. Bruno Bettelheim and Maurice Janowitz. Studies in Prejudice Series. Harper, New York.

It is now generally accepted that racial discrimination is a subject of study for psychologists, as well as for sociologists, economists and historians. The present careful analysis emphasizes the fact that the degree of intensity, if not the origins of anti-semitism, can be related to the personality of the individuals concerned. The writers although not perhaps adding a great deal to our more general comprehensions of the matter, have nevertheless clarified many smaller points and have added authoritatively to the weight of evidence against prejudice as a rational or socially inevitable fact.

They start off with four main hypotheses.

1. That hostility towards out-groups is a function of a hostile individual's feeling that he has suffered deprivations in the past.

2. That this hostility is also a function of the individual's anxiety about his future.

3. That the individual blames the out-groups for past failures and future fears, projecting undesirable characteristics in himself onto the out-group: this behaviour being indicative of a lack of ego strength and of inadequate internal controls.

4. That ethnic intolerance is related more to the individual's movements within society, than to his position at a particular moment of the investigation.

In order to test these hypotheses a random sample of 150 veterans living in Chicago was studied by an "open-ended" interview technique, the duration of the interview being 4 to 7 hours and covering sometimes more than one session. Out of this sample 61 men were tolerant of Jews; 42 displayed a somewhat stereotyped attitude (for example, "Jews are smart" or "clannish") but without much hostility; 41 were distinctly hostile, and 6 were intensely hostile. These findings concur with those of Allport who estimates that about 5–10 per cent of the American population are violently anti-semitic while perhaps 45 per cent are mildly bigoted in the same direction. This proportion of anti-semitism was related with anti-negro sentiment and, according to the writers, almost all who were intolerant of Jews, were also intolerant of Negroes, although the intensity of the feeling varied. This fact is interesting in suggesting that intolerance is based less on fear, envy, or traditions than on the type of psychological factors outlined in the writers' hypotheses.

The investigation then covers the connection between intolerance and social status, anxiety and internal controls, and the conclusions emphasize that subjective deprivation, moving downwards in the social scale and the absence of adequate control of hostile discharge are three main factors in influencing racial hostilities. As the authors admit, there are many limitations to this study. For example, although they refer to it as a sociological as well as a psychological investigation, sociological factors are not considered to any major extent. Nevertheless, the findings presented are meticulously tabulated and the method of investigation shown very clearly in the appendices. It is only when the writers proceed to discuss more general issues that one feels the inadequacy of their material for such speculation. The study of the historical background of anti-semitism to the last chapter of the book is full of facile generalizations of the type to which we have become all too accustomed. There is an analysis of the

"mediaeval super ego" which combines many of the more inadequate judgements of Mumford, Weber, and Fromm, and based on an assessment of the modern via the mediaeval ego, a series of recommendations are made. These recommendations can be reduced to suggestions that better child-care, and greater social security will reduce anti-semitism. Such facile truisms can do little to enhance the value of scientific work.

In addition, certain suggestions are made which appear to be entirely misleading. For example, the contention that if the intolerant person were forced to recognize that the outlet of anti-semitism were no longer available to him, his intolerance would diminish, would seem dubious in the light of known facts. In America during the war the extent of anti-semitic feeling in New York State led to the organization of lectures and exhibitions to demonstrate the prominent part played by Jews in the growth of the state. This measure was supposed to reduce anti-semitism, but in fact it increased it, on the principle that when one is threatened with the loss of one scapegoat, efforts are redoubled to project hostility onto it. These criticisms, however, do not affect the mass of this book, which is valuable both for its specific findings and for the clear exposition of the methods used.

Adam Curle.

Social Processes in Informal Groups: A Study of Human Factors in Housing. Leon Festinger, Stanley Schachter and Kurt Back. Harper, New York.

This book is a report of a study carried out in a housing project consisting of 270 houses for married veteran engineering students at the Massachusetts Institute of Technology, by personnel of the Albert Farwell Bemis Foundation for Housing Research, and the Research Center for Group Dynamics. The study arose through the interests of the Bemis Foundation in the effect of the planning of housing and neighbourhood amenities on social life, and concern about the general lack of information relating physical design to social structure.

A number of findings are described, some of immediate practical relevance to housing planning, others of more long-term interest to social scientists. Perhaps most striking is the way in which friendships and group-formation within this homogeneous community were determined by physical distance and functional distance, i.e., positional relationships and features of design that determine which people will meet by chance. The units of physical distance which showed up in the study as important were incredibly small, for example, the difference between houses 22 feet and 44 feet apart; such physical and functional distances are shown to play a significant part in the creation of social isolates.

For theory of group structure and functioning, a number of very suggestive points emerge. Groups with a high degree of cohesiveness also showed a high degree of conformity and few deviants, i.e., the groups had established certain standards which were then enforced on the members. The more cohesive groups were also the groups to which people both in them and outside preferred to belong. The development and enforcement of the standards is related to the process of communication within the group. An experimental study of information-spread in the project throws some light on the content and direction in which communication takes place in small groups and communities, and provides useful experimental backing for "hunches" that information closely connected with the group is easily communicated, friendship channels are most open for communication, and so on.

Consideration of the audience for which this book was written apparently prompted the authors to relegate the explicit discussion of the methodology to an appendix, although much is gathered incidentally in the book itself. This is regrettable, though perhaps inevitable, for it tends to minimize its importance. The study shows an impressive use of a battery of techniques in a carefully planned and systematic way,

progressing from the use of contacts with chance informants to participant and non-participant observation, informal small sample interviewing, standardized interviewing, sociometry (including the development of a new method of analysing sociometric data in order to show up group networks and sub-group formations as well as one-to-one relationships), and finally field experiments. The use of each method in turn provided information about the community which made it possible to use progressively more refined and accurate methods.

The method of approach to the study also enabled some conclusions to be drawn about the way in which the earlier accounts of the community were biased by the kind of contacts the investigators were able to make. This should be useful for other investigators going into other situations and using the same or other techniques.

One important point, however, is not treated ; namely, how did the presence of the investigators affect the data ? Is there such a thing as non-participant observation when the observer is in the situation and this is known by the people he is studying ? What effect did the relationship with the investigators have on the other inter-personal relations of the informants and on the people whom they felt free to visit informally ? How does the choice of point of entry affect subsequent developments ? There is often a choice explicit or implicit. How does the community consciously or unconsciously play up around the subject in which the investigators are observed to be interested ? The authors have shown that they can think constructively about this kind of problem ; the reader will want to hear their views on this aspect of methodology.

Isabel E. P. Menzies.

Delinquency and Human Nature. D. H. Stott. Carnegie United Kingdom Trust.

The Carnegie United Kingdom Trust is to be warmly congratulated on having sponsored the research project by Mr. Stott, of which this volume is the report. The Author's method is promising : he spent more than two years at a boys' Approved School, living as one of the staff and contributing to the life of the community in many ways, notably by conducting an evening club. He had unrivalled opportunities of observing his sample, which consisted of a consecutive entry of 102 boys. The only obvious handicap of this method appears to be that he was alone in his work, which fact necessarily imposed limitations.

This well-timed Report should effectively strengthen the hands of those who wish to make work with delinquents more effective. Its language is aimed at the non-specialist reader, and though this may create difficulties for those who are experienced in this field, it will enable the important general conclusions stated to bear effectively on our administrators.

After detailed descriptions of each boy in the sample, the author has amply justified his general conclusions that their delinquency was not just a matter of wanting and taking, nor of lack of moral training ; it was the result of powerful determinants. He shows up clearly the fallacies that delinquency is due to weak discipline, or to "spoiling", or to a profit motive. Such beliefs are rendered impossible by the sorry tale of human suffering met with in each instance investigated. So much for those whose only reaction to delinquency is to wish to add to the sufferings of the family by punishment !

The Report has great social value ; its scientific value, however, is perhaps dubious. Although it is the result of careful work, it is presented without systematic references or bibliography, other than a few references to the work of Healy and Bronner, mainly unfavourable, and of Burt, and a general tribute to Bowlby. The impression that this work is conceived of as starting *ab initio* is strengthened by Mr. Stott's conclusion that, since McDougall's theory of instinct and Watson's behaviourism are now discredited (*sic*), he must present a private "frame of reference" as an appendix. This formula-

tion is not intended as a complete theory, so that the reader is obliged to accept a new set of concepts which are inadequately worked out. Its most notable shortcoming is that it entirely fails to prepare the reader for the conclusion that delinquency is the result of powerful determinants.

It is difficult, on the information given, to appraise the Author's technique, but it can be stated that some of his recorded history-taking was rather vigorous, to say the least, and may well have affected the results. For a report of a serious scientific investigation, there is much which is unacceptable in the body of the document. For one thing, to start from the very beginning is almost bound frequently to make one arrive solemnly at the very obvious. Some remarks are mystifying, such as the statement that a certain youth with a lack of "moral fibre" (*sic*) would have avoided his fear if it had been genuine; or again, that an unadmitted desire for friendship and a parent substitute is typical of the withdrawn type of boy. Other remarks are plain nonsense, for example, the statement that good-looking children, because of the incidental notice and affection they pick up, practically never show extreme and consistent withdrawal.

In dealing with clinical matters, the touch is unsure. To claim to have noticed in children resenting parental lack of love an unpacifiable howling after being put to bed, and an obstinacy over daily pottings, is to be clinically maladroit. To deem nail-biting to point to an insecurity or insufficiency of affection, is about as helpful as remarking that the emergence of spring flowers shows that the winter has gone. Clinicians will be interested to read that psychological treatment of a boy is "a re-education of his emotional attitudes"; that early therapeutic action is advocated "in order to persuade the parents to adjust their attitude . . ." A reference, in two or more places, to children being reduced to psychosis by parental brutality will fail to please many.

There is more than enough of merely unscientific thinking. We are told, for example, that the brain, like any other organ, must atrophy with lack of use. Some boys are alleged to "lack the will to improve". The Author asserts that it needs no special demonstration to convince the reader that a "high emotional output is nervously exhausting to an extreme degree", and he speculates vaguely on the nature of fatigue in the nervous system. The report even goes a little way to vindicate those who consider that a medical training is important for investigators into this sphere, for organic matters and the field of medical psychology in general are handled with a marked lack of confidence. Yet it would have been possible to secure medical co-operation to avoid this. The Author's case is not helped by speculations on pulmonary tuberculosis and mental deficiency as possible psycho-somatic disorders.

Is it unfair to conclude that this work represents a maiden voyage into a clinical sphere by an investigator whose early moralistic outlook can be seen in his regret at being unable to get "a sincere confession of what actually happened" in a sex incident, but who proved quick to learn and travelled a remarkably long way in two short years? Whether this is the best background to important new work is open to question.

Difficulties of sampling and finding control groups in this type of work are, of course, well understood. The decision not to subject the detailed findings to statistical analysis is undoubtedly wise. It is possibly only unfamiliarity with the new "frame of reference" which makes the list of so-called factors appear to be a mixed bag of epiphenomena, combinations of epiphenomena, and environmental influences. They certainly defy classification by any known system of psychopathology. It might have been wiser, therefore, to have referred to the large sheet of figures bound in with the text as a tabulation of raw scores rather than as a statistical summary, which it certainly is not.

It may be a result of the limitation on what one worker can do by himself that

relatively little is known about most of the boys before the age of eight years. Thus the chain of causality remains unclear, and the factors themselves obviously can have little or no predictive value. The investigator is inevitably forced back on to broad social conclusions, which, it may be claimed, are already fairly well established among serious workers in this field.

It seems opportune to urge that the answer to research needs in delinquency in the immediate future lies in multiprofessional teamwork in depth. Mr. Stott regrets the division of psychology into two wings, clinical and academic ; though his references to psychiatry and psychiatrists throughout his book are critical, as if they were not his natural allies. His answer to the unsatisfactory situation he himself demonstrates is, in the future, to bring the wings together or, better still, to train each to be the other. However attractive the latter prospect may seem, it is extremely expensive of time and energy ; and it may be that the very division itself is dynamically determined ; there may be difficulties in the way of making a good clinician out of an academician and vice versa. Is it not a better solution to use more fully, in teamwork, such training and skill as is now available ?

Without such co-operative work at the highest levels of professional competence, the missing links in the chain of causality of delinquency are likely to continue to elude the search. As the Author of this Report himself remarks in disposing somewhat cavalierly of the work of Healy and Bronner : " There is a long road to travel between such formulations and explaining why a particular boy steals."

Kenneth Soddy.

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1951 HUMAN RELATIONS Vol. IV, No. 1 Pages 1—112

CONTENTS

Page

E. L. Trist and K. W. Bamforth. Some Social and Psychological Consequences of the Longwall Method of Coal-getting 3

Harold H. Kelley. Communications in Experimentally Created Hierarchies... 39

Milton W. Horowitz, Joseph Lyons, and Howard V. Perlmutter. Induction of Forces in Discussion Groups ... 57

Briefer Studies and Annotations

Lily Herbert. A Case Study of a Group Selection Procedure 77

P. Black. Toward a Systematic Field of Race Relations... 95

Book Reviews (Shorter Notices) 103

February, 1951 World List of Abbreviations : Hum. Rel.

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